U.S. Department of the Interior
Bureau of Land Management

Preliminary Environmental Assessment
DOI-BLM-UT-C010-2010-0048-EA

SULPHUR WILD HORSE HERD MANAGEMENT AREA (HMA) CAPTURE, TREAT AND RELEASE PLAN

Fertility Control with Limited Removal

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1.0 Purpose and Need for the Proposed Action

1.1 Introduction

The Bureau of Land Management (BLM) is proposing to gather approximately 250 wild horses from the Sulphur Herd Management Area (HMA) beginning on or after December, 2010. The gather is being done in an attempt to slow population growth by treating captured mares with fertility control vaccine PZP-22 (Porcine Zona Pellucida). It is also anticipated that this would help maintain population size within the appropriate management level (AML), and extend the time before another gather to remove excess wild horses would be needed.

A majority of all wild horses captured (approximately 220 animals) would be released back to the range following the gather. Of these, about 90 would be mares vaccinated with PZP-22, with the remainder of the release horses being stallions.

Approximately 30 excess wild horses or up to 15% of those animals gathered, mostly weaned foals or young yearlings, and any wild horses residing outside the HMA boundary would be removed from the area and placed into the BLMs adoption program or into long-term pastures. This removal would help facilitate the goal of extending the time before another gather is needed, and maintain population size within the established AML while avoiding the deterioration of the range that can result from wild horse overpopulation. Weaned foals or young yearling horses are being targeted for removal specifically to help avoid any post gather concerns of animals becoming orphaned following the capture event.

This Environmental Assessment (EA) is a site-specific analysis of the potential impacts that could result with the implementation of the Proposed Action or alternatives to the Proposed Action. Preparation of an EA assists the BLM's authorized officer to determine whether to prepare an Environmental Impact Statement (EIS), if significant impacts could result, or a Finding of No Significant Impact (FONSI), if no significant impacts are expected.

This document is tiered to the *Pinyon Management Framework Plan (MFP)/Final EIS dated 1983* and the Sulphur Wild Horse Herd Management Area Plan (HMAP;1987). Should a determination be made that implementation of the Proposed Action or one of the alternative actions would not result in "significant environmental impacts" or "significant environmental impacts beyond those already addressed in the Resource Management Plan (RMP)/EIS and MFP," a FONSI will be prepared to document that determination, and a Decision Record issued providing the rationale for approving the chosen alternative.

1.2 Background

The Sulphur HMA comprises approximately 265,676 acres of public and other land. The HMA is located in Beaver, Iron, and Millard counties, about 50 miles west of Milford, Utah (See Map 1).

In June of 1983 the Pinyon MFP decisions established the population level for horses in the HMA as not less than 135 and not more than 180 head. In April of 1987, the Warm Springs RMP set the AML in that portion of the HMA in accordance with these numbers. Approximately 76% of the horses in this HMA occupy the Cedar City Field Office area and 24% are in the Fillmore Field Office area. The Sulphur Wild Horse HMAP; 1987) further defined the AML as a population "which does not fall below 135 head or exceed 180 head of adult horses defined as those over two years of age.". If wild horses of all ages are included in the AML number, the AML is 165 head to 250 head. The upper limit of the AML is the maximum number of wild horses that can graze in a thriving natural ecological balance and multiple use

relationship on the public lands in the area. Establishing AML as a population range allows for the periodic removal of excess animals (to the low range) and subsequent population growth (to the high range) between removals.

Table 1 AML Establishment.

HMA	ALLOTMENT	DECISION	AML
Sulphur	Atchison Creek	Pinyon MFP Rangeland Program Summary Record of Decision (1983)	135-180
	Indian Peak		
	Mountain Home		
	Bennion Spring		
	South Pine Valley		
	North Pine Valley		
	Fairview	Warm Spring RMP Record of Decision (1987)	35-75
	Hamblin		
	Stateline		
	All of above	*Sulphur Wild Horse Herd Management Area Plan (1987)	135-180 (Adult horses over two years old) **165-250** (Total Horse Population)

* Combined the AML for the Pinyon MFP and Warm Springs RMP and defined the AML.

The BLM prepared the Sulphur Wild Horse Gather and Removal No. EA-UT-040-08-19 to analyze the potential impacts associated with the previous gather which was completed in November of 2008; this analysis is incorporated by reference. At that time, 362 wild horses were gathered, 333 removed, and 29 (12 mares, 17 studs) treated with fertility control and released back to the range. Of these, 10 mares were treated with fertility control (Porcine Zona Pellucida, PZP-22) vaccine and freeze-marked for future identification. Post-gather, 190 wild horses remained within the HMA.

Table 2. Current AML for Sulphur HMA

HMA	Total Acres	Appropriate Management Level	Estimated Population	Removal	% of AML
Sulphur HMA	**265,675**	165-250	276	30	167%-110%
Total	**265,675**	165-250	276	30	167%-110%

The current estimated population of wild horses within the HMA is estimated at 276 head. This estimated population number is based on an aerial survey (conducted in February 2008) direct count with an estimated count of 80% of the total population based on coverage, weather, terrain, tree cover, snow cover, and knowledge of the HMA/horses, which estimated the population at that time at 435 head of wild horses. The 2008 foal crop was added to the estimated population, 333 head that were removed in the gather in November 2008 were subtracted and the 2009 and 2010 foal crops were added to formulate the current

estimated population. The foal crop and survival of those foals increased the estimated wild horse population within the HMPA by 20% each year between March 1 and July1. The current estimated population of 276 wild horses is 110% of the upper AML (CCFO, BLM 4700 Files).

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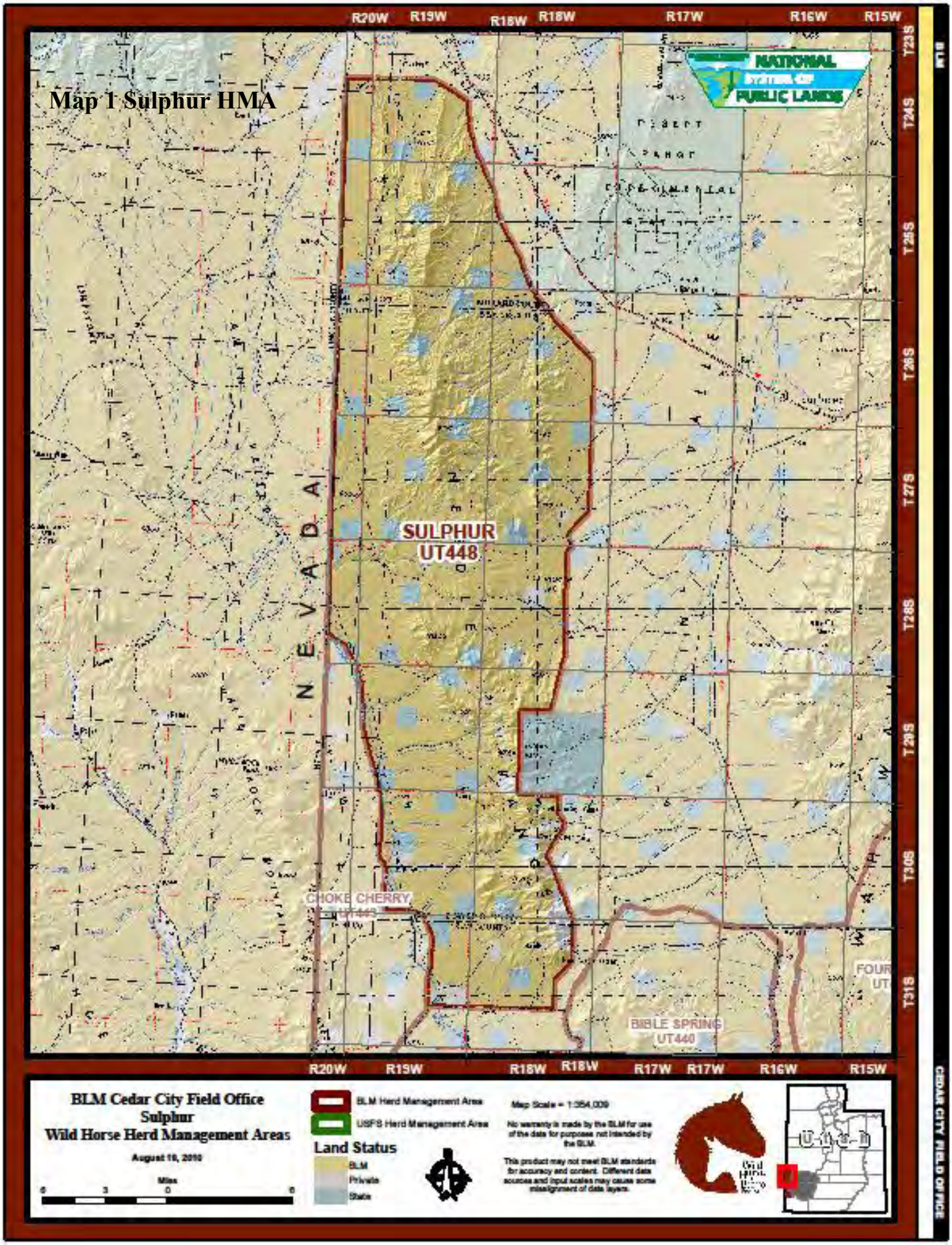
Map 1 Sulphur HMA
R20W
R19W
R18W
R18W
R17W
R16W
R15W
T23S
T24S
T25S
T26S
T27S
T28S
T29S
T30S
T31S
NATIONAL SYSTEM OF PUBLIC LANDS
NEVADA
SULPHUR
UT448
CHOKE CHERRY
BIBLE SPRING
UT440
BLM Cedar City Field Office
Sulphur
Wild Horse Herd Management Areas
August 19, 2010
Miles
BLM Herd Management Area
USFS Herd Management Area
Land Status
BLM
Private
State
Map Scale = 1:354,009
No warranty is made by the BLM for use of the data for purposes not intended by the BLM.
This product may not meet BLM standards for accuracy and content. Different data sources and input scales may cause some misalignment of data layers.
Wild Horse Herd
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CEDAR CITY FIELD OFFICE

1.3 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to gather approximately 250 wild horses beginning on or after December 01, 2010. The gather is being done in an attempt to slow population growth by treating captured mares with fertility control vaccine PZP-22. It is also anticipated that this would help maintain population size within the AML of 165-250, and extend the time before another gather to remove excess wild horses would be needed.

A majority of all wild horses captured (approximately 220 animals) would be released back to the range following the gather. Of these, about 90 would be mares vaccinated with PZP-22, with the remainder of the release horses being stallions.

Approximately 30 excess wild horses or up to 15% of those animals gathered, mostly weaned foals or young yearlings, and any wild horses residing outside the HMA boundary would be removed from the area and placed into the BLMs adoption program or into long-term pastures. This removal would help facilitate the goal of extending the time before another gather is needed, and maintain population size within the established AML while avoiding the deterioration of the range that can result from wild horse overpopulation. Weaned foals or young yearling horses are being targeted for removal specifically to help avoid any post gather concerns of animals becoming orphaned following the capture event.

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 only a small number of mares in the Sulphur HMA were treated in 2008 during the last removal gather, populations in the HMA are at the upper limit of AML this year. This has resulted in the need for more horses (approximately 30 head) to be removed and placed for adoption/sale or in long-term pastures. The remaining horses that are gathered would be released with sex ratio and fertility control that would slow the reproductive rate/population increase to reduce the number of wild horses that would need to be removed from the HMA in future years.

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 to remove excess horses;
- reduce the number of wild horses being placed in short-term holding or long-term pastures;
- maintain wild horse populations within AMLs;
- remove wild horses that occupy areas outside the Sulphur HMA boundary; and

- maintain a thriving, natural ecological balance and multiple use relationship on public lands in the Sulphur HMA.

1.4 Land Use Plan Conformance

The Proposed Action conforms to the Pinyon MFP approved June 10, 1983. The MFP decision (RM 1.8, WH 1.1…) outlines: "Consolidate and stabilize the Mountain Home-Sulphur herd unit and establish these numbers between 135 and 180 horses. The Mountain Home allotment presently has no grazing privileges. Livestock grazing will not be permitted unless monitoring studies following consolidation and stabilization of the horse numbers confirm adequate forage exists for the established numbers and wildlife."

The MFP also states that the number of herd units and the population of each herd would depend on the results of monitoring studies, range condition, viewing opportunities, cooperative management, and range developments.

The Warm Springs Resource Area RMP (1987) identifies the Sulphur HMA as being suitable for wild horses and will maintain horse numbers in the HMA through "periodic removals." The Sulphur HMAP identifies the HMA boundaries in both of the land use plans as suitable for wild horses and states the removal objective for both land use plans as "remove excess wild horses from the Sulphur HMA when the population of adult horse, those two and older, reaches the upper level of 180 horses."

1.5 Relationship to Laws, Regulations, and Other Plans

In conformance with the policy developed by the Utah State Director and approved by the Secretary of Interior, the Proposed Action Alternative would be in compliance with the following:

Gathering excess wild horses is in compliance with Public Law 92-195 (WFRHBA of 1971) as amended by Public Law 94-579 (FLPMA of 1976), and Public Law 95-514 (Public Rangelands Improvement Act [PRIA] of 1978). The WFRHBA, 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 "Herd management areas shall be established [through the land use planning process]for the maintenance of wild horse and burro herds. In delineating each herd management area, the authorized officer shall consider the appropriate management level for the herd, the habitat requirements of the animals, the relationships with other uses of the public and adjacent private lands, and the constraints contained in 4710.4. The authorized officer shall prepare a herd management area plan, which may cover one or more herd management areas."

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."

43 CFR 4740.1 "(a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All such use shall be conducted in a humane manner. (b) Before using helicopters or motor vehicles in the management of wild horses or burros, the authorized officer shall conduct a public hearing in the area where such use is to be made."

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 effect on historic properties, those sites listed on or eligible for the National Register of Historic Places. This process is described under 36 CFR 800 and is required under Section 106 of the National Historic Preservation Act of 1966.

Executive Order 13212 directs the BLM to consider the President's National Energy Policy and potential adverse impacts the alternatives may have on energy development.

The Proposed Action is also in conformance with Decision Records and FONSIs for the Sulphur Herd Fertility Control (DOI-BLM-UT-C010-2009-0028-DNA), Sulphur Wild Horse Gather & Removal Plan (UT-040-08-019), Sulphur HMA Emergency Wild Horse Gather Plan (DNA) (UT-040-06-019), Sulphur HMA Emergency Wild Horse Gather Plan (UT-040-03-035), Sulphur Wild Horse Emergency Gather (UT-044-01-005), Wild Horse Gather and Removal Play FY98 (Bible Springs, Frisco, Four Mile & Sulphur HMAs) (UT-044-98-009), Sulphur, Frisco, & Bible Springs Horse Removal (UT-044-94-007), Sulphur & Chloride Canyon Wild Horse Removal (UT-044-92-011), Sulphur Wild Horse Removal Plan (UT-040-79-038), and Sulphur Wild HMP (UT-040-76-107).

The Proposed Action complies with BLM Utah Riparian Management Policy (Instruction Memorandum UT-93-93, March 1993). This policy states that riparian areas will be maintained in or improved to "Proper

Functioning Condition." In addition, the Proposed Action and No Action Alternative would comply with the following laws and/or agency regulations, other plans and would be consistent with Federal, state and local laws, regulations, and plans to the maximum extent possible.

- Taylor Grazing Act (TGA) of 1934
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.) as amended
- Public Rangelands Improvement Act (PRIA) of 1978
- Endangered Species Act (ESA) of 1973 as amended
- Bald and Golden Eagle Protection Act of 1962
- BLM Manual 6840 – Special Status Species Management
- Migratory Bird Treaty Act
- Utah Comprehensive Wildlife Conservation Strategy (CWCS)
- Utah Partners in Flight Avian Conservation Strategy Version 2.0
- Birds of Conservation Concern 2002
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- IM 2008-50, Migratory Bird Treaty Act – Interim Management Guidance
- Title 43 CFR 4700 Protection, Management, and Control of Wild Free-Roaming Horses and Burros
- Standards of Quality for Waters of the State, R317-2-6, Utah Administrative Code, December, 1997
- Utah BLMUtah Riparian Management Policy (IM UT-93-93) of 1993
- National Environmental Policy Act of 1969 (as amended)
- American Indian Religious Freedom Act of 1979
- Archaeological Resource Protection Act of 1979
- Native American Graves Protection and Repatriation Act of 1990
- National Historic Preservation Act of 1966, as amended
- Appropriations Act, 2001 (114 Stat. 1009) (66 Fed. Reg. 753, January 4, 2001)
- United States Department of the Interior Manual (910 DM 1.3).
- Standards and Guidelines for Healthy Rangelands, 1997 (BLM-UT-GI-98-007-1020)
- Fundamentals of Rangeland Health (43 CFR 4180)
- Sulphur Wild Horse Herd Management Area Plan (HMAP) of 1987

1.6 Decision to be Made

The authorized officer would determine whether to implement all, part or none of the proposed action as described in Section 2.2.2 regarding management of wild horses within the Sulphur HMA. The authorized officer's decision would not set or adjust AML, or adjust livestock use, as these were set through previous decisions.

1.7 Scoping and Identification of Issues

Public Involvement was initiated on this Proposed Action on July 1, 2010 by posting on ENBB. As of the date of this document no interested public or organization has contacted the CCFO BLM about this project.

On June 9, 2010 a public meeting on the use of motorized vehicles (including helicopters) to capture,

move, and conduct population inventories on wild horses was held at the BLM's Salt Lake Field Office in Salt Lake City, Utah. This specific gather was addressed as one of many gathers that may occur within the state of Utah over the next 12 months. This meeting was advertised in papers and radio stations state wide. The meeting was attended by 12 members of the public and media. No comments were received at that meeting specific to the use of motorized helicopters and motorized vehicles in the management of wild horses and burros in Utah. No comments were received about this proposed action or the alternatives in this document.

Based on internal scoping and experience with previous gathers, the following issues have been identified:

1. Impacts to individual wild horses and the herd. Measurement indicators for this issue include:

- Projected population size and annual growth rate (Win Equus population modeling);
- Expected impacts to individual wild horses from handling stress;
- Expected impacts to herd social structure;
- Expected effectiveness of proposed fertility control application;
- Potential effects to genetic diversity; and
- Potential impacts to animal health and condition.

2. Impacts to vegetation/soils, riparian/wetland, and cultural resources. Measurement indicators for this issue include:

- Potential impacts to vegetation/soils and riparian/wetland resources; and
- Expected forage utilization.

3. Impacts to wildlife, migratory birds, and threatened, endangered, and special status species and their habitat. Measurement indicators for this issue include:

- Potential for temporary displacement, trampling, or disturbance; and
- Potential competition for forage and water over time.

1.7.1 Critical Elements of the Human Environment and other Resources/Areas of Concern

Identification of issues for this assessment was accomplished by considering the resources that could be affected by implementation of one of the alternatives, as well as through involvement with the public and input from the BLM interdisciplinary team.

Critical elements of the human environment as identified in BLM Handbook 1790-1, Appendix 5 must be considered. Resources within the project area that may be affected must also be discussed. Those critical elements of the human environment and resources which are not present, or are not affected by the Proposed Action or alternatives, are included as part of the Interdisciplinary team checklist (Appendix 1). Rationale for dismissing specific resources or critical elements is also contained as part of Appendix 1. These critical elements and resources will not be discussed further.

Those critical elements of the human environment and resources which may be affected by the Proposed Action and/or alternatives are carried forward throughout this analysis, and are discussed briefly as follows.

1.7.1.1 Rangeland Health/Vegetation

Drought conditions and overpopulation of wild horses between 1999 and 2005 have reduced forage production in some of the key wild horse habitat areas. Although livestock numbers were reduced and/or completely removed from the allotments in the Sulphur HMA during most of the drought, excess wild horses and a high population of elk overgrazed many areas during critical growth periods. This, along with the reduced vigor of the plants because of the drought, caused mortality of key forage species throughout the HMA. Inadequate residual vegetation (forage) and litter remaining on certain key uses areas would allow soil loss and erosion. Appendixes 2-4 contain the Rangeland Health Standards and Guidelines.

1.7.1.2 Livestock Grazing

Portions of nine grazing allotments are part of the Sulphur HMA. Of these, eight have livestock grazing privileges. Five are cattle allotments (Atchison Creek, Hamblin, Bennion Spring, North Pine Valley, and South Pine Valley), one is a cattle and sheep allotment (Indian Peak), and two are sheep allotments (Fairview and Stateline). Mountain Home has no domestic livestock grazing privileges. Overlap of areas of use between wild horses and livestock do occur on specific sites on the five above mentioned allotments causing competition for forage, water, and cover. Fences constructed for livestock management can restrict the free roaming nature of the wild horses. Water development can be beneficial to wild horses by providing more reliable, and expanded sources of water. However, water developments may be detrimental to wild horses if sources are dewatered and water is not provided at other nearby location.

Detailed information about the authorized livestock use within the HMA is provided in Term Grazing Permit Renewals EAs UT-044-01-040, UT-040-07-005, UT-040-07-008, UT-040-08-016, and DOI-BLM-C010-2009-0015-EA for those allotments.

1.7.1.3 Soils

Under the current situation, with wild horses above AML and current livestock and wildlife levels, inadequate residual vegetation (forage) and litter remain on certain key use areas in the herd unit, as reflected in Rangeland Health Assessments from allotments within the herd area. Wild horse trails, primarily those that traverse steep terrain going to and from water sources, are compacted by animal activity. Horses and other species also contribute to soil compaction within riparian areas, reducing oxygenation, percolation and retarding plant growth. All these factors, which are caused at least in part by excess numbers above AML, directly affect the soil's exposure to erosive elements such as wind and water. A reduction in horse numbers would allow additional vegetation to remain on these key areas, thus providing additional protection to the soil surface.

1.7.1.4 Wetlands/Riparian Zones

Riparian/wetland areas occur within the Sulphur HMA. Overgrazing of riparian areas could occur depending on the number of wild horses and moisture conditions within the HMA. Riparian exclosures are constructed to protect sensitive riparian areas from excessive grazing. Wild horses often breach exclosure fences, which can result in degraded conditions within the exclosure. Riparian exclosures are typically constructed to ensure that wild horses and livestock still have areas where they can access water resources.

1.7.1.5 Wildlife including: (T & E, BLM Special Status Species and Migratory Birds)

High wild horse numbers may result in increased competition for forage with wildlife, particularly big game.

1.7.1.6 Wild Horses and Burros

Rangeland resources and wild horse health have been and are currently being affected within the Sulphur Herd Management Areas (HMA), due to drought and overpopulation. Excess wild horses above the AML have reduced available forage, resulting in increased competition for available resources. Wild horses have expanded outside of the HMA in search for forage, water, and cover. Some interchange between horses in the Sulphur HMA and adjacent HMA are occurring because of the excess numbers of wild horse currently on the Sulphur HMA. The gather, treatment and removal of wild horses from the Sulphur HMA would have direct and indirect impacts to individual animals and the social structure of bands in the area. Most impacts would be short term (under 1 year), but some would be long term (greater than a year). These impacts will be discussed within this EA.

2.0 Proposed Action and Alternatives

2.1 Introduction

This section of the EA describes the Proposed Action and alternatives, including any that were considered but eliminated from detailed analysis. Two alternatives are considered in detail:

- **Proposed Action Alternative:** Capture approximately 250 wild horses and apply PZP-22 fertility control vaccine to roughly 90 mares to be released back into the HMA. Approximately 30 excess wild horses or up to 15% of those animals gathered, mostly weaned foals or young yearlings, and any wild horses residing outside the HMA boundary may be removed from the area.

- **No Action Alternative:** No capture to apply fertility control vaccine to mares 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.

The Proposed Action was developed to respond to the Purpose and Need. The No Action Alternative would not achieve the identified Purpose and Need. However, it is analyzed in this EA to provide a basis for comparison with the other action alternatives, and to assess the effects of not conducting a gather at this time.

2.2 Description of Alternatives Considered in Detail

2.2.2 Alternative A - Proposed Action

The Proposed Action is to gather approximately 250 wild horses beginning on or after December 01, 2010. The gather is being done in an attempt to slow population growth by treating captured mares with fertility control vaccine PZP-22.

A majority of all wild horses captured (approximately 220 animals) would be released back to the range following the gather. Of these, about 90 would be mares vaccinated with PZP-22, with the remainder of the release horses being stallions. Every effort would be made to return the released horses to the same general area from which they were gathered.

Approximately 30 excess wild horses or up to 15% of those animals gathered, mostly weaned foals or young yearlings, and any wild horses residing outside the HMA boundary would be removed from the area. Weaned foals or young yearling horses are being targeted for removal specifically to help avoid any post gather concerns of animals becoming orphaned following the capture event.

A population inventory would be conducted in November of 2010 to more accurately determine the population of wild horses on the Sulphur HMA and surrounding area. The estimated population of wild horses determined from these inventories would be used to adjust the number of wild horses that would be gather, vaccinated with PZP-22 and released back into the HMA. The number of wild horses removed from the HMA may be adjusted based on the estimated population from this population inventory.

All animals removed from the HMA following the gather 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. Additionally, horses found with injuries needing treatment and any wild horses residing outside the HMA boundary would be removed from the range.

The gather would begin on or after December 2010 and take about 10 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) (Appendix 5).

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 whenever possible. New trap sites would be selected to avoid sensitive resources. 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 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

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 from about 25-100 animals to assess the genetic diversity of the herd.

During gather operations, vehicle access on the Hamlin Valley Road and other major roads within 2 miles of the trap sites would be allowed but may be restricted to accompanying a pilot car. Where necessary to insure public and animal safety, access to all other roads and trails could be temporarily restricted. Restrictions would only occur in the HMA actively being gathered.

2.2.3 Alternative B - No Action Alternative: 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. Based on WinEquus modeling, this gather would occur in 2011. 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 A. The post-release sex ratios would approximate the desired level of 40% females and 60% males.

2.3 Alternatives Considered but Dismissed from Detailed Analysis

2.3.1 Use of Bait and/or Water Trapping

An alternative considered but dismissed from detailed analysis was use of bait and/or water trapping as the *primary* gather method. This alternative was dismissed from detailed study for the following reasons: (1) the size of the area at 265,675 acres is too large to use this method; (2) access for vehicles necessary to safely transport gathered wild horses is limited; and (3) the presence of water sources on both private and public lands inside and outside the HMA would make it almost impossible to restrict wild horse access to only water trap sites to the extent needed to effectively gather and remove the excess animals. For these reasons, this alternative was determined to not be an effective or feasible method for gathering wild horses from the Sulphur HMA.

2.3.2 Remove or Reduce Livestock within the HMA

This alternative would involve no removal of wild horses and instead address the excess wild horse numbers through the removal or reduction of livestock within the HMA. This alternative was not brought forward for detailed analysis because it is outside of the scope of the analysis, and is inconsistent with the Pinyon MFP, and the WHBA which directs the Secretary to immediately remove excess wild horses, and is inconsistent with multiple use management. Livestock grazing can only be reduced or eliminated following the process outlined in the regulations found at 43 CFR Part 4100 and would require a change in the Pinyon MFP. Such changes to livestock grazing cannot be made through a wild horse gather decision.

Livestock permit renewals were completed in 2006 – 2010 on the allotments within and adjacent to the Sulphur HMA. Each of these renewals had Environmental Assessments and Decision Records completed. These decisions established stocking rates for livestock. The decisions also established seasons of use, areas of use, kind and class of livestock and management actions to improve livestock distribution. These management actions included the establishment of grazing systems, allowable use levels, salting and herding practices. Some livestock reductions were made in these decisions on allotments within the Sulphur HMA. Livestock grazing continues to be evaluated for allotments and use areas within the Sulphur HMA. Monitoring and evaluation of livestock grazing is in accordance with the Pinyon MFP's Rangeland Program Summary section IV, 17, which states:

"Rangeland studies and monitoring programs will be continued and/or initiated to determine if rangeland management objectives are being achieved and if proposed grazing use levels must be adjusted. This monitoring program will continue on all allotments. Particular attention will be given those areas where there is high resource conflict or there is the possibility of rapid improvement or deterioration of the rangeland resources. The concentration of rangeland monitoring will be on those allotments in the "I"

category.

The monitoring program will evaluate changes in range condition and trend which includes determination of plant vigor, plant character, plant density, plant phenology, ground cover and degree of forage utilization on key species. Four primary studies will be used in this evaluation: (1) actual grazing use, (2) forage utilization, (3) range trend, and (4) climate analysis. In addition, data on wildlife habitat, riparian vegetation, and watershed condition will be collected and used as needed. When results of studies are evaluated and it is determined that the objectives are not being achieved on a specific allotment, modifications could include changes in grazing systems, livestock numbers, season of use, additional rangeland developments, or any combination of these alternatives."

The BLM is currently authorized to remove livestock from HMA "if necessary to provide habitat for wild horses or burros, to implement herd management actions, or to protect wild horses or burros from disease, harassment or injury" under CFR 4710.5. This authority is usually applied in cases of emergency and not for general management of wild horses or burros in a manner that would be inconsistent with the land-use plan and separate decisions establishing the appropriate levels of livestock grazing and wild horse use respectively. Available data also indicates that wild horse use – including where livestock use has been excluded – has resulted in excessive vegetative utilization and impacts to rangelands that are recovering from wildfire.

2.3.3 Wild Horse Numbers Controlled by Natural Means

This alternative was eliminated from further consideration because it is contrary to the WFRHBA which requires the BLM to prevent the range from deterioration associated with an overpopulation of wild horses. It is also inconsistent with the Pinyon MFP and the Sulphur Herd Management Area Plan which directs that Color Country District BLM conduct gathers as necessary to achieve and maintain AML. The alternative of using natural controls to achieve a desirable AML has not been shown to be feasible in the past. Wild horses in the Sulphur HMA are not substantially regulated by predators. In addition, wild horses are a long-lived species with documented foal survival rates exceeding 95% and they are not a self-regulating species. This alternative would result in a steady increase in numbers which would continually exceed the carrying capacity of the range until severe and unusual conditions that occur periodically-- such as blizzards or extreme drought-- cause catastrophic mortality of wild horses.

2.3.4 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 Affected Environment

This section of the EA briefly discusses the relevant components of the human environment which would be either affected or potentially affected by the Proposed Action or No Action. Direct impacts are those that result from the management actions while indirect impacts are those that exist once the management action has occurred.

3.1 General Description of the Affected Environment

The Sulphur HMA is located in western Iron, Beaver, and Millard Counties, Utah approximately 50 miles west of Minersville, Utah in the Indian Peak and Mountain Home Mountain Ranges. The Sulphur HMA is approximately 265,675acres.

The Sulphur HMA has elevations ranging from 9,790 feet on top of Indian Peak to 6,000 feet in the valley floors

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Average annual precipitation in Sulphur HMA ranges from 8 to 15 inches a year, depending on elevation. In 2005 the precipitation was near 110 % -130% of normal in the HMA. In 2000 and 2006 annual precipitation was near normal. However, because of the timing of precipitation, it had little effect on the recovery of vegetation or the recharge of springs and seeps. In 1999, 2001 2002, 2003, 2004, 2007, 2008, and 2009 drought conditions and below normal precipitation occurred, with 2002 and 2003 being severe drought years (BLM precipitation data). Vegetation, springs, and seeps continue to struggle to recover from so many years of below normal precipitation.

Available water within the complex is the limiting factor regarding these horse populations. Water is limited to isolated springs and man-made developments that supply water to permitted livestock, wildlife and wild horses. Several springs primarily used by wild horses, were dry during the summers of 2000, 2001, 2002, 2003, 2004, 2007, and 2008 forcing animals onto winter ranges and into areas outside of the HMAs traditionally unoccupied by horses.

3.2 Description of Affected Resources/Issues

Identification of issues for this assessment was accomplished by considering the resources that could be affected by implementation of one of the alternatives, as well as through involvement with the public and input from the BLM interdisciplinary team. Public involvement consisted of posting the proposal on the Utah BLM Environmental Notification Bulletin Board on July 1, 2010.

As required by regulation [43 CFR 4740.1(b)], a public hearing was held in Salt Lake City, Utah on June 9, 2010 to discuss the use of helicopters and motorized vehicles in the management of Utah BLM's wild horses and burros. No comments were received at that meeting specific to the use of motorized helicopters and motorized vehicles in the management of wild horses and burros in Utah. No comments were received about this proposed action. The critical elements and other constituents of the human environment incorporate most of the public's concerns. The remaining concerns will be addressed under appropriate sections of this EA.

Critical elements of the human environment as identified in BLM Handbook 1790-1, Appendix 5 must be considered. Resources within the project area that may be affected must also be discussed. Those critical elements of the human environment and resources which are not present, or are not affected by the Proposed Action or alternatives, are included as part of the Interdisciplinary team checklist (Appendix 1). Rationale for dismissing specific resources or critical elements is also contained as part of Appendix 1. These critical elements and resources will not be discussed further.

Those critical elements of the human environment and resources which may be affected by the Proposed Action and/or alternatives are carried forward throughout this analysis, and are discussed briefly as follows.

3.2.1 Rangeland Health/Vegetation

Vegetation production and vigor has been reduced by drought (Standard and Guideline Studies). Drought is defined as prolonged dry weather generally when precipitation is less than 75% of average annual amount (Society for Range Management 1974). Precipitation is the most important single factor determining the type and productivity of vegetation in an area. Forage production increases, rapidly as precipitation increases up to about 20 inches per year (Holechek, 1989). Slight reduction from normal precipitation can cause severe reductions in plant yield in areas with less than 12 inches of precipitation (Klages 1942). During the period from 2007-2009, average annual precipitation only exceeded 12 inches in the highest elevations within Sulphur HMA, and averaged around 50 % and 90% of the normal precipitation depending on the area.

The current drought cycle has had a tremendous influence on rangeland vegetation. As described above, year-long grazing by wild horses has put additional stress on key forage species already affected by drought. Some key forage species have been lost. Recovery could take 5 to 15 years, depending on how severely the drought affected a particular area. Two or more years of drought have far greater impact on vegetation than one year of drought followed by normal or above-normal precipitation.

The Sulphur HMA supports multiple vegetation types including: Aspen, Mountain Fir, Spruce-Fur, Mounatin Shrub, Pinyon-Juniper (PJ), sagebrush, grasslands, and salt desert shrub (Table 3). The PJ woodland type dominates the HMAs and is very dense with minimal understory forage. Open areas outside the PJ canopy are dominated by big sagebrush with Indian ricegrass, wheatgrass, bluegrass, and squirreltail grass as the primary forage species.

Table 3 Vegetation Within the Sulphur HMA.

HMA Name	Vegetation Cover	Acres	Percent
SULPHUR	Aspen	333	0%
SULPHUR	Desert Grassland	1,841	1%
SULPHUR	Grassland	29,001	11%
SULPHUR	Juniper	20,372	8%
SULPHUR	Mountain Fir	606	0%
SULPHUR	Mountain Shrub	259	0%
SULPHUR	Pinyon	56,889	21%
SULPHUR	Pinyon-Juniper	126,634	48%
SULPHUR	Sagebrush	9,201	3%
SULPHUR	Sagebrush/Perennial Grass	19,090	7%
SULPHUR	Salt Desert Shrub	1,120	0%
SULPHUR	Spruce-Fur	223	0%
	Total	**265,569**	**99%**

Within portions of the HMA, chaining and/or burning P-J woodlands, followed by aerial seeding, changed much of the P-J woodlands to a grassland and shrub community. These projects reduced tree cover to 6% or less and produced a large amount of available forage such as grass and browse species. Vegetation species diversity was also greatly increased within the HMAs through these projects. Many of these treated areas are now 20-30 years old, and pinyon/juniper or sagebrush has re-invaded these areas, reducing vegetation diversity. This reduction in plant species diversity has placed the HMAs in the

„functioning at risk' category (4700, Standards and Guidelines Study files 2004-2008).

Reseeded areas have an expected life span of 15-20 years before sagebrush and pinyon-juniper out-compete seeded species and once again become the major cover type. Most of the seeded areas produced forage for 10 to 20 years longer than expected. When the current drought began in 1998 most of the seedings had lost some of their productivity due to age. Production of forage species was limited by the drought and some plants died, increasing the grazing on surviving forage species. During this time wild horse population in the Sulphur HMA was at the highest point since the passage of the Wild Horse and Burro Act of 1971. Heavy and severe utilization near water and on treated areas, by wild horses, wildlife and livestock, contributed to the loss of seeded species and the invasion of sagebrush and pinyon-juniper.

Utilization studies that have been completed during the past 20 years, along with Cedar City Staff observations, suggest that as wild horse populations increase they contribute to the decrease of forage species. This is especially true in grassland, sagebrush/grassland, and seeded areas.
Year-long grazing by wild horses has been one contributing factor to the downward trend of the grasses and forbs in some areas. Horses, because they are territorial, are grazing the same areas repeatedly throughout the spring during critical growing periods for grasses. High populations of wild horses can reduce the available forage for not only the year the grasses are grazed, but also for years to come. Horses will graze the most desirable forage plants first before grazing on other species. Wild horses are capable of cropping forage much more closely than wild or domestic ruminants, causing a loss of the most desirable forage species and reducing plant diversity.

From 1996 to 2003, 2005, 2006, 2007, and 2010 the excess number of wild horses (numbers over AML) within the HMA reduced the amount of available forage for all grazing animals.

Precipitation

Precipitation has been monitored on the HMA using the Ryan, South Hamlin Valley, North Hamlin Valley and Indian Peak Range Gauges, which are the most representative range gauges for this HMA. These range gauges are maintained by the BLM and are read quarterly. The Indian Peak Rain Gauge is in the south part of the HMA. The data gathered from these rain gauges show drought condition occurred on the HMA from the fall of 1999 to until the first part of 2004. The most severe part of the drought occurred during 2003 with total precipitation well below 50%. During the 4th quarter of 2004 the drought was ended with significant precipitation in the form of snow fall. This type of beneficial precipitation continued throughout 2005, with North Hamlin Valley Gauge ending with 175% of normal precipitation for the year. In 2006 was near or above the 30 year average. The South Hamblin Valley and Ryan rain gauges recorded 70%-80% from 2007 to present. The Indian Peak and North Hamblin Valley rain gauges recorded 70%-90% for the same period. This variance in precipitation from one rain gauge to another and the timing of the precipitation suggest that heavy thunder showers occurred during those years. The heavy thunder showers produce large amounts of water quickly and for a short duration. The water runs off quickly and does not benefit the vegetation as much as snow and light showers for extended periods of time.

Utilization

Utilization levels on the allotments associated with the Sulphur HMA varied greatly according to the location of water, type of livestock, season of use, and concentration of wild horses. In general areas that are within 2 miles of water were generally use moderately to Severe during drought years 1999-2004. Other high quality upland areas were grazed to the Moderate to Heavy levels during the drought. In 2005

with above normal precipitation most of these upland areas started to recover from the drought and utilization levels dropped below the Moderate level throughout the HMA. In 2006-2008 the high population of wild horses and elk in the HMA increased utilization on areas within in 1 mile of key waters and on high forage value area (seedings) to Moderate and Heavy. In 2009 Heavy utilization around waters was reduced from 1 mile to ¼ to ½ mile. Most other areas throughout the HMA remained below moderate utilization with the exception of a portion of the Meadow Springs Fire Rehabilitation Area and the Mountain Home Seeding. Both of these areas were received Heavy utilization and are only grazed by wild horses and wildlife.

On October 23 and 24, 2008 utilization studies were conducted on the north part of the Sulphur HMA. The areas around Cobb, Needle Point, Pine, Paw Sum Paw, Mt. Home, Loper and Ripgut springs were monitored. The areas in the higher elevations (summer habitat) were grazed Heavy to Severe and few horses are left in those areas. The lower elevations utilization varied from Light to Severe use depending on the number of horses in the area. Most areas near dependable water sources were grazed heavy to severe. Approximately 3-4 miles from the water source the utilization would drop to Moderate to Heavy. The area around Needle Point spring and the solar well was only use Slightly, with lots of good feed in the area. However only 8 head of horses were seen and it is estimated that only 15-20 head are using that area. The northwest part of the HMA around Tweedy Wash does not have a dependable water source and only has light utilization on the grasses. The other areas monitored were being use by the high population of wild horse and elk. The area in this north part of the Sulphur HMA did not have any livestock permitted in it for the spring or summer. All of the use was by wildlife and wild horses.

Since that time utilization has been conducted on North Pine Valley, Stateline, Mountain Home, and Fairview Allotments. Use was Light to Moderate on the upland areas and heavy at water sources and riparian areas. This is a great improvement to 2008 studies when the wild horse population was double the upper AML.

Trend

Five trend studies were set up within and adjacent to the Sulphur HMA by Utah Division of Wildlife Resources (UDWR) to monitor vegetation for big game. The Upper Hamblin Valley (20-5-08) and Mountain Home Seeding (20-3-08) studies are within the HMA. The South Spring (20-7-08), Lower Indian Creek (20-2-08), and Upper Indian Creek (20-1-08) study is outside the HMA within the Indian Peak Wildlife Management Area. The Indian Peak Wildlife Management Area is owned by the state is completely fenced to excluded wild horses and livestock. However, wild horses and livestock get through the fence on a yearly basis and utilize the area until they can be removed. These studies were established in 1991, and 1998 depending on the study. All studies were last read in 2008. These studies are available at Utah Big Game Range Trend Studies website (http://wildlife.utah.gov/range/wmu30.htm). These studies describe the browse trending slightly up or stable with the exception of the Upper Hamlin Valley study which was slightly down in 2008. Herbaceous species trending was slightly up or stable. These findings are also noted in the BLM frequency studies and the Rangeland Health Assessments that have been completed within the HMA. Frequency studies completed by the BLM on allotments that occur within the HMA suggest the trend is in general stable or static condition. Additional information on the vegetation studies have been summarized in the Sulphur Wild Horse Gather and Removal EA # EA-UT-040-08-19, and Term Grazing Permit Renewals EAs UT-044-01-040, UT-040-07-005, UT-040-07-008, UT-040-08-016, and DOI-BLM-C010-2009-0015-EA.

Rangeland Health

Rangeland Health data has been collected on all but the Mountain Home Allotment. The final Rangeland Health Summaries have been completed on these allotments except for the North Pine Valley Allotment. Ratings varied between allotments from Functioning at Risk to Functioning. The allotments that were Functioning at Risk listed casual factors for this rating as encroachment of pinyon-juniper, past livestock management, wildlife and wild horse grazing. The Mountain Home Allotment does not have livestock grazing permitted on it. Grazing use on the Mountain Home Allotment consists of wildlife, wild horses, and the occasional trespass cattle. Additional information on the Rangeland Health studies have been summarized in the Sulphur Wild Horse Gather and Removal EA # EA-UT-040-08-19, and Term Grazing Permit Renewals EAs UT-044-01-040, UT-040-07-005, UT-040-07-008, and UT-040-08-016.

3.2.2 Livestock Grazing

Livestock Management

Table 4 identifies the current season of use and permitted use within each of the allotments associated with the Sulphur HMA (see map 2).

DRAFT

Map 2 Livestock Grazing Allotment within Sulphur HMA.

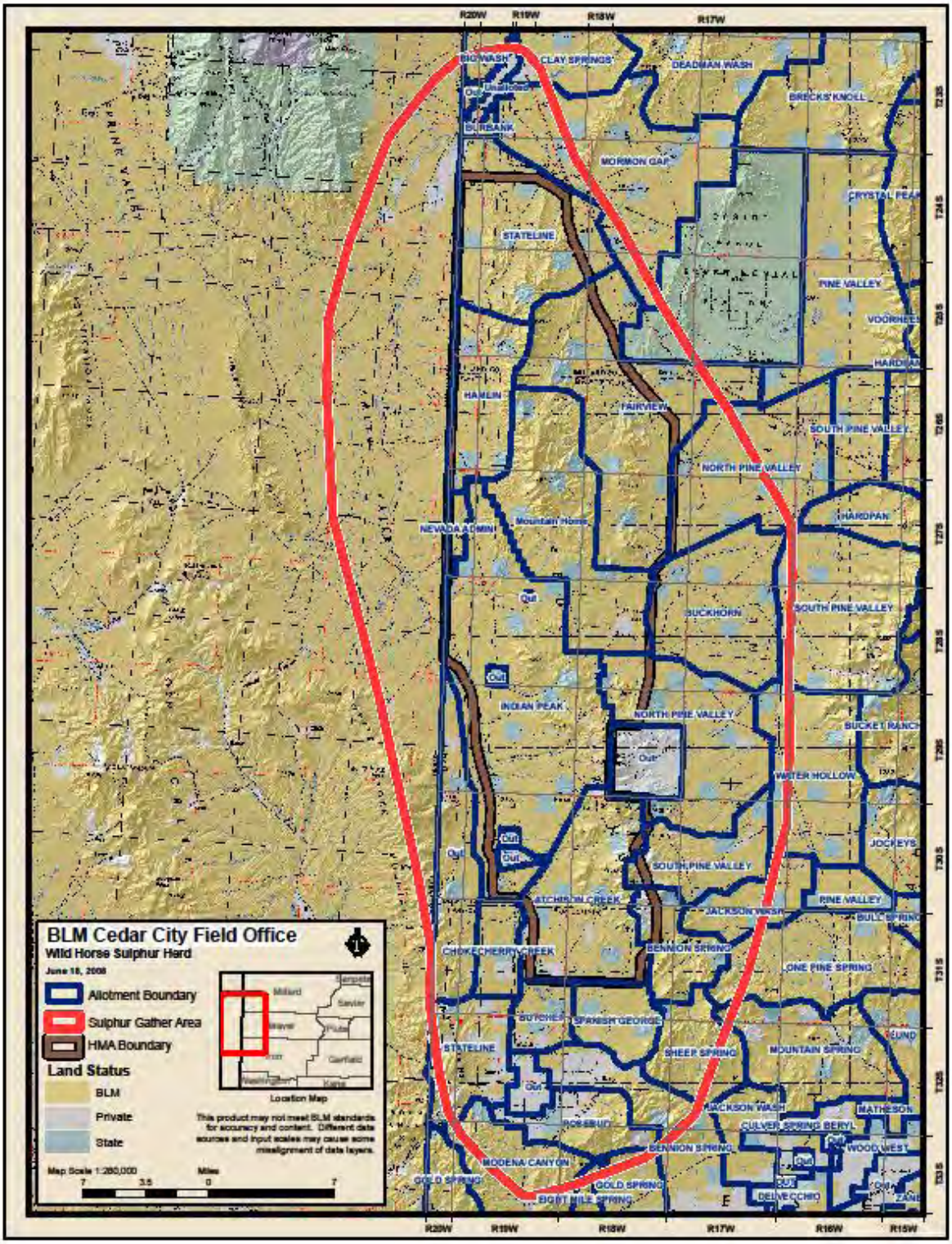

Table 4 Allotment Associated with Sulphur HMA.

HERD MANAGEMENT AREA	ALLOTMENT	CLASS OF LIVESTOCK	SEASON OF USE	ACTIVE AUMS	PERCENT OF ALLOTMENT WITHIN HMA
Sulphur	Atchison Creek (M)	Cattle	7/1-8/15	267	93%
	Indian Peak (I)	Cattle Sheep	3/1-2/28 6/15-2/28	1476 282	92%
	Mountain Home (M)	None			100%
	Fairview (I)	Sheep	10/16-2/28	4253	73%
	Hamblin (I)	Cattle	10/16-6/5	2225	100%
	Stateline (M)	Sheep	11/1-4/30	3820	51%
	Bennion Spring (I)	Cattle	4/1-11/30	2130	5%
	South Pine Valley (M)	Cattle	3/1-2/28	5806	2%
	North Pine Valley (I)	Cattle	3/1-2/28	5172	8%

(I-Improve, M-Maintain)

Wild horses compete with livestock for forage and water on these allotments. Permitted livestock use was voluntarily reduced on each of these allotments from 1999-2005 due to reduced forage and water availability caused by extended drought. The past four years the voluntary reductions in livestock use have been taken to allow vegetative recovery from the extended drought.

3.2.3 Soils

The soils in the HMA are highly variable ranging from High Mountain Loams to Desert Sands. On the allotments that have had rangeland health assessments completed, the upland soils standard was met in the Indian Peak, South Pine Valley, Hamlin, Fairview, Stateline, and portions of the Bennion Spring Allotment within the HMA. The Atchison Creek Allotment had areas where the upland soils standard was not meet due to overland flow patterns, pinyon-juniper invasion, and overutilization from elk, wild horses, and livestock. Though not recently documented, the Mountain Home unalloted area is known to have problems similar to Atchison Creek Allotment. The causal factors for soils on these allotments can be related back to the vegetation conditions that were address earlier in this section. As vegetation is improved the soils are more stable and erosion is reduced.

All allotments had some areas where soil compaction has occurred along trails and near water. When wild horse numbers are high there is increased soil compaction around water and from the increased trails that occur as horses travel from key forage areas to the water. When wild horse numbers are reduced the trails leading into water are decreased and the compaction areas around waters are decreased.

3.2.4 Wetlands/Riparian Zones

Small wetland/riparian areas are abundant throughout the Sulphur HMA and consist of streams, seeps, and springs that occur on public, state, and private lands. There are approximately 11 miles of riparian habitat and 30 acres of wetlands in the Sulphur HMA that have been inventoried. An unknown amount of riparian/wetland that occurs within the Sulphur HMA still needs to be inventoried. Common riparian/wetland species are willows, cottonwoods, sedges, rushes, Woods rose, and Kentucky bluegrass. The riparian/wetland areas that have been inventoried since the early 1980s, have approximately 4.4 acres

rated in proper functioning condition, 10.02 miles and 15.84 acres rated as functioning at risk with upward trend, 1.2 miles and 8.2 acres rated as functioning at risk with no apparent trend, .7 acres functioning at risk with downward trend and 0.4 miles rated as nonfunctional. Riparian habitats represent less than 1 percent of the total acreage of public lands in the Sulphur HMA. Reptiles, amphibians, mammals, and bird species routinely use riparian areas for food, water, cover or migration routes. Many neotropical migratory birds are riparian obligates.

Table 5 Riparian Ratings

Lotic Resources	**Riparian Functional Rating**					**Total Miles**
	PFC	**FAR-UP**	**FAR-NA**	**FAR-DN**	**NF**	
Total Miles Assessed		10.02	1.2			11.22
Percent of Total Miles (%)		89%	11%			100%

Lentic Resources	**Riparian Functional Rating**					**Total Acres**
	PFC	**FAR-UP**	**FAR-NA**	**FAR-DN**	**NF**	
Total Acres Assessed	4.4	15.84	8.2	.7	.4	29.54
Percent of Total Acres (%)	15%	54%	28%	2%	1%	100%

Causal Factors:

The rationale for the less than PFC rating was water development, dewatering, road encroachment, upstream channel conditions, juniper encroachment, rabbitbrush encroachment, recreation, and riparian exclosure maintenance. Livestock, wild horses, and wildlife were also noted as causal factors for portions of the streams not rating at PFC. Wild horses, wildlife, and livestock graze riparian areas due to the presence of water, shade, and succulent vegetation. Riparian areas are vulnerable to the effects of overgrazing due to heavy concentration of wild horses wildlife, and livestock within these areas. Livestock, wildlife, and wild horse grazing impacts water in many ways. Grazing impacts can alter the chemical, physical and biologic integrity of the water. Grazing impacts also have the ability to modify the hydrologic response of watersheds by reducing infiltration, reducing vegetative cover, stream channel/floodplain degradation, accelerated erosion processes, surface roughness, and increase compaction. All of these impacts are known to occur, but the impacts cannot be quantified in a predictive manner. Many of the causal factors are within the control of management.

Riparian-wetland areas support a wide variety of avian fauna, mule deer, elk, pronghorn, greater sage grouse, Townsend's big-eared bat and many other small mammals, reptiles, and amphibians. Riparian-wetland resources provide food, shelter, breeding ground, and migration corridors for a variety of wildlife species. Mule deer and elk are attracted to riparian areas due to cooler summer temperatures, valuable forage, water availability, and in treed sites the ability of the communities to provide hiding cover as well as thermal cover in the winter. Lowland riparian areas provide a valuable source of water and succulent forage for pronghorn. Mule deer utilize riparian-wetland areas during fawn rearing because riparian vegetation along springs, streams, meadows, and aspen stands are a source of succulent grasses and forbs; which provide important nutrition during gestation and lactation.

3.2.5 Wildlife including: (T & E, BLM Special Status Species and Migratory Birds)

Threatened, Endangered and Candidate Species

Utah prairie dog (*Cynomys parvidens*): Utah prairie dog habitat consists of deep, well drained soils suitable for digging and burrow stability. Generally prairie dogs occupy habitats with an open vegetative structure that do not inhibit visual surveillance or intraspecific interactions. Succulent vegetation, primarily grasses and forbs are important forage for prairie dogs.

There are no known occurrences within the Sulphur HMA boundary; however prairie dogs do occur within 9 miles of gather activities. Competition between wild horses and Utah prairie dogs for grasses and fobs typically occurs during the spring and summer seasons.

Greater sage-grouse *(Centrocercus urophasianus)*: The Greater sage-grouse is a USFWS candidate species (USFWS 2010). The greater sage-grouse is a sagebrush obligate; therefore, it is reliant upon shrub steppe habitat for primary breeding, secondary breeding and winter habitat.

Two greater sage-grouse active leks have been identified to occur within the Sulphur HMA. Additionally, a portion of the Sulphur HMA is identified by UDWR as crucial brood-rearing and winter habitat.

Special Status Wildlife Species

BLM's 6840 Manual directs management of Special Status Species: Special status species are those species which are proposed for listing, officially listed as threatened or endangered, or are candidates for listing as threatened or endangered under provisions of the Endangered Species Act (ESA); those listed by a State in a category such as threatened or endangered implying potential endangerment or extinction; and those designated by each State Director as sensitive. Further guidance is provided in Utah BLM Instruction Memorandum No. UT-2007-078, which states that "*By this Instruction Memorandum, Utah BLM adopts the existing Utah Division of Wildlife Resources (UDWR) Utah Sensitive Species List.*"

The following summarized the additional Special Status Wildlife Species (excluding species listed under ESA) recognized by management under BLM's 6840 Manual and Instruction Memorandum No. UT-2007-078. The Utah Sensitive Species list is available at http://dwrcdc.nrutah.gov/ucdc/ViewReports/sslist.htm. These species are known to occur or have a high probability of occurrences within the North Hills HMA.

Burrowing Owl *(Athene cunicularia)*: The burrowing owl is a UDWR Sensitive Species (UDWR 2008) and Bird of Conservation Concern (USFW 2002). The burrowing owl was designated as a Tier II species in the Comprehensive Wildlife Conservation Strategy (UDWR 2005). Primary breeding habitat for this species is high desert scrub and grasslands are used as secondary breeding habitat. Nesting may occur in sparsely vegetated sagebrush steppe and desert scrub habitat. Abandoned wildlife burrows associated with badger, groundsquirrels, etc. are an important component of the habitat.

Kit Fox *(Vulpes macrotis)*: The kit fox is a UDWR Sensitive Species (UDWR 2008). The kit fox was designated as a Tier II species in the Comprehensive Wildlife Conservation Strategy (UDWR 2005). Primary breeding habitat is high desert scrub.

Ferruginous Hawk *(Buteo regalis)*: The Ferruginous hawk is a UDWR Sensitive Species (UDWR 2008), Utah Partners in Flight Priority Species (Parrish et al. 2002), and Bird of Conservation Concern (USFWS 2002). The ferruginous hawk was designated as a Tier II species in the Comprehensive Wildlife Conservation Strategy (UDWR 2005). Primary breeding habitat is pinyon-juniper and secondary breeding habitat is shrubsteppe. Edges of pinyon-juniper woodland, utility structures (transmission poles), cliffs and isolated trees serve to provide nesting as well as perching structures for ferruginous hawk.

Pygmy rabbit *(Brachlagus idahoensis)*: The pygmy rabbit is a UDWR Sensitive Species (UDWR 2008). It is designated as a Tier II species in the Comprehensive Wildlife Conservation Strategy (UDWR 2005). Pygmy rabbits are considered sagebrush obligates and are reliant upon big sagebrush species for food and cover. Primary breeding habitat is shrubsteppe communities. Known locations of pygmy rabbit burrows have been identified within the Sulphur HMA.

Big Game:

Big game species that occur in the Sulphur HMA are mule deer, elk and pronghorn. All three species are year-long residents. During spring, summer and early fall, deer feed primarily on a variety of forbs and grasses, with light use on big sagebrush and antelope bitterbrush. In fall and winter, deer shift their diet to shrubs including big sagebrush, bitterbrush, gambel oak and curlleaf mountain mahogany. Elk rely primarily on grasses year-long for forage, but will use some forbs in spring and summer and shrubs in the winter. Antelope forage includes a variety of grasses and forbs in late spring, summer and early fall, and big sagebrush, winterfat and bud sage in late fall and winter.

Migratory Birds

The Migratory Bird Treaty Act (16 U.S.C. §703-712, July 3, 1918, as last amended in 1989) prohibits taking, killing, or possessing migratory birds including nests and eggs. In 2001, Executive Order 13186 was issued to outline responsibilities of federal agencies to protect migratory birds under the Migratory Bird Treaty Act (66 FR 3853-3856). Instruction Memorandum 2008-050 provides interim guidance to enhance coordination and communication towards meeting BLM's obligations to the Migratory Bird Treaty Act and Executive Order 13186.

Golden eagles may occur on the Sulphur HMA year round. The SWreGAP Animal Habitat Model has shown know or probable winter habitat. A majority of the HMA would be used for foraging.

3.2.6 Wild Horses

Through the years, a great deal of information has been gained with the completion of gathers and population inventory flights of the HMA in the Cedar City Field Office. A summary of current knowledge is given below.

Population Growth Rates (PGR) - The percentage of growth annually in a herd (PGR) varies annually in the HMA Population inventory flights have been conducted, as funding would allow, to compile statistics regarding production in herd. Annual PGRs in the HMA varied from 17% to 31% (Table 6). The reasons for the variance in years have not been identified. Possible reasons include:

- The unauthorized capture or removal (43 CFR 4770.1 (b)) of foals when they are young and easy to catch. Due to the remoteness of the areas and the lack of personnel, patrolling the HMA during

the spring months when the foals are young and easy to catch is difficult.

- Horses may occasionally be killed by mountain lions or coyotes. Both species would take the opportunity to prey upon weakened, sick, or very young animals. However, neither of these species is believed to have impacted the herd more than minimally through the years.
- Variance in climatic factors (drought, snow cover, etc.) affecting foal survival, forage availability, or survey accuracy.

Table 6. Population growth rates for the Sulphur HMA from 1996 to 2007

HMA	1996	1997	2000	2005	2007
Sulphur	28%	24%	17%	20%	21%

In general, wild horses are a long-lived species with documented foal survival rates exceeding 95% and adult (15 years) survival rates exceeding 90% (Table 7). Much of this research has been compiled into a population modeling program and is available for use by the BLM to model different potential changes to the population with changes in management (Appendix 7).

Table 7. Sample survival rates by age class for wild horse herds in Montana and Nevada.

Wild Horse Range	Age/Sex Classes	Survival Rate
Pryor Mountain Wild Horse Range, Montana	Foal	>95%
	15 years and younger, except for foals, both sexes	93%
Granite Range HMA, Nevada	Foal	>95%
	15 years and younger, except for male foals	92%
Garfield Flat HMA, Nevada	Foal	> 95%
	24 years and younger, except both foals, both sexes	92%

Herd Dynamics - The sex ratio of the wild horses in the HMA deviates from a target population of 40% females and 60% males. In 2003 the sex ratio of adult wild horses gathered was 57% females and 43% male. During the 2006 gather of 163 adult horses 55% were female and 45% were male. Of the adult animals gathered in 2008, 53% were females and 47% were males.

Current Population - Based on a population inventory completed in November 2008, there would be an estimated 276 wild horses, including foals, in the HMAs by summer 2010.

Appropriate Management Level (AML) - The Sulphur Wild Horse Herd Management Area Plan (HMAP) (1987) defined the AML as a population "which does not fall below 135 head or exceed 180 head of adult horses defined as those over two years of age." If wild horses of all ages are included in the AML number, the AML is 165 head to 250 head.

An AML range was established for several reasons. Resource degradation would likely occur when wild horse population levels exceed the upper range of an AML. Yearly gathers would be required to maintain the wild horse population at the AML if a range were not established. An AML range allows flexibility to gather to a lower number and be able to allow the herd to build over time to the higher number. Horses would be within the AML range for a longer period of time and would be disturbed less often.

The current National Wild Horse and Burro Policy states that periodic removals will be planned and conducted to achieve and maintain AML and be consistent with AML establishment and removal decisions (Instruction Memorandum No. 2010-135, refer to: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2010/IM_2010-135.html). The established AML ranges would allow for a three or four year gather cycle and maintenance of a thriving natural ecological balance.

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.

HMA Genetic Diversity and Viability - Blood or hair samples are important to determine genetic diversity and viability of the horse herds to ensure population diversity. After the 1995 gather, blood samples were taken on 118 horses from the north part of the Sulphur HMA. In 2006, blood samples were taken from 68 horses (56 from north and 12 from the south). In 2008, hair samples from 93 horses (53 from the north and 40 from the south. The following summarizes current knowledge of genetic diversity as it pertains to the HMA:

1995

- The genetic marker data indicate that the Sulphur herd has a clear Spanish component in its ancestry. Genetic variation within the herded is high enough that there is no immediate concern for this herd in terms of genetic problems.

2006

- Overall similarity of both Sulphur herds to domestic breeds was about average for feral herds. Highest mean genetic similarity of the both Sulphur herds was with Light Racing and Riding breeds, followed by the Oriental and Arabian breeds for Sulphur South and North American Gaited breeds for Sulphur North. As seen in Fig. 1, the Sulphur herd does not fit in with any of the major breed clusters. The two herds are closest to each other. Previous work using blood typing markers clearly placed the Sulphur herd in with the Spanish breeds group. It is not clear if the horses tested in 2006 represent the exact same group as those tested in 1997.
- Genetic variability of this herd is relatively high and appears to have been stable over a period of about 10 years. The values related to allelic diversity are near the average while heterozygosity is high which could represent a demographic effect such as a rapid change in population size or population mixing. Genetic similarity results suggest a herd with mixed ancestry but not showing close relationship to any particular group.
- Current variability levels are high enough that no action is needed at this point but there is a fairly high percentage of variation at risk of loss so it is important that the population size be maintained at a level required to maintain genetic diversity. It generally requires a population size of 120 or more animals to minimize the rate of loss of variability. This is somewhat dependent upon whether the possibility of mixing with other populations exists.

2009

- Report has not been completed.

4.0 Environmental Consequences

4.1 Introduction

This section of the EA documents the potential environmental impacts which would be expected with implementation of the Proposed Action and/or the No Action Alternative. These include the direct impacts (those that result from the management actions) and indirect impacts (those that exist once the management action has occurred).

4.2 Predicted Effects of Alternatives

The direct and indirect impacts to these resources which would be expected to result with implementation of the Proposed Action or No Action Alternatives are discussed in detail below.

4.2.1 Rangeland Health/Vegetation

Impacts of Alternative A: The Proposed Action Alternative

Competition for forage and water between wild horses, and livestock would be directly reduced. A reduced number of wild horses within the Sulphur HMA due to reduce population increase would improve and/or sustain rangeland health and keep use levels within management plan objectives.

A reduced demand for forage would help improve the vigor of vegetation, allow for seedling establishment, increase ground cover, and thereby maintain a thriving natural ecological balance. The recovery from the extended drought would be allowed to continue and should show improved vegetative trend of key forage species, if precipitation remains near or above long-term average levels. Long-term rangeland health would continue to be met within and/or improve within the Allotments as key forage and riparian areas would receive less use, especially during time of drought when wild horse are hardest on these areas.

Reducing and maintaining the wild horse population to within AML would contribute to maintaining sufficient vegetation and litter within HMAs to protect soil from erosion, meet plant physiological requirements, facilitate plant reproduction, and reduce potential for spread of noxious weeds.

There would be direct impacts to the vegetation immediately in and around temporary trap sites, and holding, sorting and animal handling facilities. Impacts are created by vehicle traffic, and hoof action of penned horses and can be locally severe in the immediate vicinity of the corrals or holding facilities. Keeping the sites approximately ½ acre in size would minimize the disturbance area. Since most trap sites and holding facilities are re-used during recurring wild horse gather operations, any impacts would remain site specific and isolated in nature. In addition, most trap sites or holding facilities are selected to enable easy access by transportation vehicles and logistical support equipment and would therefore generally be near or on roads, pullouts, water haul sites or other flat spots which were previously disturbed. These common practices would minimize the cumulative effects of these impacts.

The use of fertility control on wild horse gathers would not impact rangeland resources and vegetation directly, but would have indirect impacts if wild horse populations were reduced or maintained within AML for longer periods of time. The lower wild horse populations and/or populations within AML would extend the beneficial impacts describe in this section above.

Impacts of Alternative B: The No Action Alternative
Under the No Action Alternative, wild horses would continue to increase in population size beyond the capacity of the habitat to provide water and forage. Heavy and severe use of vegetation resources by wild horses would continue and increase, resulting in further degradation of plant communities, increased soil erosion, and susceptibility to invasive species. Downward trends in key perennial species would be expected in conjunction with reductions in ecological condition and soil stability. The vegetative functional groups (i.e. grass, shrubs, trees etc.) would be changed as grasses are over utilized during critical growing seasons. Vegetation would also experience reduced production resulting in reduced forage availability to wildlife, livestock, and wild horses. Eventually rangeland health would be reduced below a threshold that would be difficult to recover from. Significant progress towards PMFP and Sulphur HMP objectives and Standards and Guidelines for Healthy Rangelands would not occur.

4.2.2 Livestock

Impacts of Alternative A: The Proposed Action Alternative
Livestock located near gather activities may be temporarily disturbed or displaced by the helicopter and the increased vehicle traffic during the gather operation. This displacement would be temporary; and the livestock would move back into the area once gather operations moved. Past experience has shown that gather operations have little impacts to grazing cattle and sheep. No adjustments in permitted livestock use, active AUMs, season of use and/or terms and conditions would occur as a result of the Proposed Action. Direct impacts of the gather activities itself would be minor and short-term.

Indirect impacts to livestock grazing would be an increase in forage availability and quality, reduced competition for water and forage, and improved vegetative resources that would lead to a thriving ecological condition. The use of fertility control would extend the time the indirect impacts would occur.

Impacts of Alternative B: The No Action Alternative

Livestock would not be displaced or disturbed due to gather operations under the No Action Alternative. However, forage conditions (quality and quantity) would continue to deteriorate on the range. As wild horse numbers increase, livestock grazing within the HMA may have to be further reduced in an effort to slow the deterioration of the range to the greatest extent possible or because rangeland conditions do not support the multiple uses for which the public lands are being managed.

4.2.3 Soils

Impacts of Alternative A: The Proposed Action Alternative
The proposed action would impact soil with minor trampling and disturbance occurring at trap sites and holding facilities. Any direct, indirect, and cumulative effects to soil resources resulting from the proposed action would be minor and short-term. The project implementation would stay on existing roads, combined with the relative small areas used for gathering and holding operations.

Removing excess wild horses would make progress towards achieving a “thriving natural ecological balance.” Implementation of the proposed action would reduce the wild horse population within the HMA within AML. It would reduce further impacts to soil resources, and be in compliance with the Wild Free

Roaming Horse and Burro Act and land use plan management objectives. Rangeland health and soil resources would improve with the reduced population in the long-term.

Overall, soil conditions are expected to improve after wild horse numbers are reduced then maintained at lower levels than currently (ie at AML). Fewer numbers of wild horses using riparian systems would result in a lessening of soil compaction in riparian areas where the soils are most susceptible due to their higher moisture content. Compression related impacts to biological soil crusts from horses would be lessened over the area with horse removal, and crust cover on the highly calcareous soils would increase. Following wild horse removal, increased vegetative and biological soil crust cover should reduce wind and water erosion.

Impacts to soils with implementation of the Proposed Action would include disturbance around temporary trap sites, and holding and processing facilities. Impacts would be by vehicle traffic and the hoof action of penned horses, and would be locally severe in the immediate vicinity of the corrals or holding facilities. Generally, these activity sites would be small (less than one half acre) in size. Soil compaction, localized wind erosion, and destruction of biological soil crusts where present, would occur at the trap sites. Since most trap sites and holding facilities would be re-used during recurring wild horse gather operations, any impacts would remain site-specific access by transportation vehicles and logistical support equipment and would generally be adjacent to or on roads, pullouts, water haul sites, or other flat spots that were previously disturbed. Vehicles used in the horse gather would also cause soil compaction and increased erosion in a small area. By adhering to the SOPs, adverse impacts to soils would be minimized.

Impacts of Alternative B: The No Action Alternative

With the no action alternative, wild horse populations would continue to grow. Increased horse use throughout the HMA would adversely impact soils health, especially around riparian resources. As native plant health deteriorates and plants are lost, soil erosion would increase. Continued heavy wild horse use, especially around water sources, would cause further compaction, reduced infiltration, increased runoff and erosion, and loss of biological soil crusts. Compaction caused impacts would be greatest on moist soils and soils with few surface coarse fragments. The greatest disturbance impacts to crusts would occur when the soils are dry and on highly calcareous sites. The shallow soils typical of this region cannot tolerate much loss without losing productivity and thus the ability to be re-vegetated with native plants. Invasive, non-native plant species would increase and invade new areas following increased soil disturbance and reduced native plant vigor and abundance. Wild horses likely transport weed propagules, and this transport would increase as horse numbers increase. This would lead to both a shift in plant composition towards weedy species and an irreplaceable loss of topsoil and productivity due to erosion. With the no action alternative, the severe localized trampling associated with trap sites would not occur, but this alternative would not make progress towards achieving and maintaining a thriving natural ecological balance.

4.2.4 Wetlands/Riparian Zones

Impacts of Alternative A: The Proposed Action Alternative

The Proposed Action would not have any direct impacts to riparian wetland zones or water quality. Trap sites and temporary holding facilities would not be constructed on riparian resources.

The Proposed Action would indirectly impact riparian wetland zones and water quality due to the decreased utilization by wild horses in these sensitive areas allowing for the possibility of riparian

wetland areas to improve through natural processes. Implementing the Proposed Action would slightly decrease current competition for water sources and alleviate pressures exerted on riparian habitat due to wild horses congregating around these sensitive areas. If the breeding mares left on the HMA were treated with PZP birthrates reducing the population growth for up to 3 years, this would further reduce utilization impacts on wetlands/riparian resources by extending the time the population is within AML. The functionality of riparian resources would improve in condition towards a more properly functioning condition (PFC) with the removal of excess wild horses.

Impacts of Alternative B: The No Action Alternative

The No Action Alternative would not have any direct impacts to riparian/wetland resources. Indirect impacts would result from continued and increased utilization on riparian vegetation as wild horse populations continue to increase. Wild horse population size would continue to increase in excess of the established AML. Riparian areas currently rated at Proper Functioning Condition (PFC), could experience downward trends caused by utilization of riparian vegetation and browse, and trampling by populations of wild horses in excess of AML. Riparian areas rated below PFC (Functional at Risk and Non-Functional) would likely not improve, and downward trends would continue. Wild horses have been identified through Proper Functioning Condition Assessments as a contributing factor in riparian areas within the Sulphur HMA not being in PFC. Standard 2 in the Standards for Rangeland Health which states *"Riparian and wetland areas are in properly functioning condition…"* is not currently being met for riparian areas within the HMA.

4.2.5 Wildlife including: (T & E, BLM Special Status Species and Migratory Birds)

Impacts of Alternative A: The Proposed Action Alternative

Wildlife

Activities such as (i.e. helicopters) can have short-term effects on wildlife due to human noise and activity. Fertility control would likely decrease the wild horse population and lessen the competition between wildlife and wild horses for forage. Maintenance activities could potentially displace sensitive species in the short-term, but would have long term beneficial effects. Some wildlife present in or near trap sites or holding facilities would be temporarily displaced. Wildlife and wildlife habitat would be indirectly affected by the Proposed Action as it pertains to resulting improvements in resource health from the removal of wild horses. Implementing the Proposed Action would reduce utilization on key forage species, improving the quantity and quality of forage available to wildlife and decrease competition for water sources.

Threatened, Endangered and Candidate Species

Impacts from grazing on TEC species would include competition for habitat; competition for forage; and destruction and degradation of habitat. Wild horses would compete with wildlife species for habitat that is suitable for nesting, breeding and burrowing in upland habitats such as sagebrush and grasslands.

To limit impacts to Utah prairie dogs, all facilities associated with wild horse gather should be located a minimum of 0.5 miles from Utah prairie dog colonies. Trap sites and other facility locations/staging areas will be reviewed to ensure that placement will not occur within Utah prairie dog colonies. The removal of excess wild horses will improve the vegetative state of the area and thereby improve Utah prairie dog habitat. Incorporation of the stipulations will lead to no impact on the Utah prairie dog.

Direct impacts to sage-grouse would consist primarily of disturbance and short-term displacement by the low-flying helicopter and construction of the temporary trap/holding facilities. A reduction/removal of the wild horse population would decrease competition for available forage, cover, and space between wild horses and sage-grouse. Trap sites and other facility locations/staging areas will be reviewed to ensure that placement will not occur within an identified sage-grouse lek.

The gather is scheduled to occur during December, prior to the sage-grouse seasonal breeding period; impacts to the sage-grouse are expected to be minimal.

Special Status Wildlife Species

Impacts from grazing on BLM/Sensitive Species would include competition for habitat; competition for forage; and destruction and degradation of habitat. Wild horses would compete with wildlife species for habitat that is suitable for nesting and burrowing in upland habitats such as sagebrush/grasslands.

During the Sulphur gather, there is the potential that wild horses might trample and collapse underground dens and burrows of species such as the kit fox, and pygmy rabbit. If occupied dens are collapsed, the inhabitants could be crushed and killed, if they are not killed, additional stress and energy would be expended to dig out the collapsed burrow or den. Potential habitat for the pygmy rabbit is primarily big sagebrush communities and washes, so the occurrence of pygmy rabbits in the Sulphur gather area is likely. There is a slight possibility that those site-specific species, such as the pygmy rabbit would be trampled. Trap/holding facilities/staging areas would be placed in previously disturbed areas. If a new trap or holding facility is identified a wildlife site inventory may be required prior to the gather. Temporary displacement may occur during the gather however, the impacts are expected to be minimal to kit fox and pygmy rabbit.

Big Game

Competition for forage between big game and wild horses is greatest during the spring and summer months when deer, elk and pronghorn are feeding primarily on grasses and forbs. Competition is reduced in fall and winter when deer and pronghorn shift their diet to browse and elk move to wintering areas in the Hamblin valleys. Competition between wildlife and wild horses increases during periods of drought when less forage is available.

Direct impacts would consist primarily of disturbance and short-term displacement of big game by the low-flying helicopter and construction of the temporary trap/holding facilities. A reduction/removal of the wild horse population would decrease competition for available forage, cover, space and water between big game and wild horses.

Migratory Birds

Because the proposed gather would not occur during the nesting season, typically April – July, the gather would likely have a low potential for disturbance to individual nesting birds and no potential for impact to migratory bird populations.

Impacts of Alternative B: The No Action Alternative

Wildlife (TEC, BLM/State Sensitive and Big Game Species)

Under the No Action important upland habitats would continue to be impacted to a greater degree as the wild horse population is allowed to increase. Upland communities currently receiving heavy use during the critical growth period or repeated use by wild horses would continue to be impacted. Competition for

forage; and destruction and degradation of habitat. Wild horses would compete with wildlife species for habitat that is suitable for nesting, foraging and burrowing.

Migratory Birds
The No Action Alternative would have no direct impact to migratory birds since the gather would not take place. Indirect impacts would be decreased forage and cover, which would cause a loss of habitat for some species of migratory birds.

4.2.6 Wild Horses and Burros

Impacts of the Proposed Action Alternative
Under the Proposed Action, about 250 wild horses would be captured, 30 removed, and 220 would be released back to the range. The animals to be removed would consist mainly of any wild horses residing outside the HMA, or weaned foals, yearlings, and orphan foals. These animals would be transported to a BLM short-term corral facility or other fostering location where they would receive appropriate care, and be prepared for adoption, sale (with limitations) or long-term holding. Any old, sick or lame horses that would be unable to maintain an acceptable body condition (greater than or equal to a Henneke BCS 3) would be humanely euthanized as an act of mercy.

Fertility control would be applied to all the released mares to decrease the future annual population growth. The procedures to be followed for the implementation of fertility control are detailed in Appendix 6. Each released mare would receive a single dose of the two-year PZP contraceptive vaccine. When injected, PZP (antigen) causes the mare's immune system to produce antibodies and these antibodies bind to the mare's eggs, and effectively block sperm binding and fertilization (Zoo, Montana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and environment, and can easily be administered in the field. In addition, among mares, PZP contraception appears to be completely reversible.

The highest success for fertility control has been obtained when applied during the timeframe of November through February. The efficacy for the application of the two-year PZP vaccine based on winter applications follows:

Year 1	Year 2	Year 3	Year 4
Normal	94%	82%	68%

One-time application at the capture site 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). The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Mares would foal normally in 2011 (Year 1).

The injection would be controlled, handled, and administered by a trained BLM employee. Mares receiving the vaccine would experience slightly increased stress levels associated with handling while being vaccinated and freeze-marked. Serious injection site reactions associated with fertility control treatments are rare in treated mares. Any direct impacts associated with fertility control, such as swelling or local reactions at the injection site, would be minor in nature and of short duration. Most mares recover quickly once released back to the HMA, and none are expected to have long term consequences from the fertility control injections.

Direct and Indirect Gather Impacts
Over the past 35 years, various impacts to wild horses as a result of gather activities have been observed. Under the Proposed Action, impacts to wild horses would be both direct and indirect, occurring to both individual horses and the population as a whole.

The BLM has been conducting wild horse gathers since the mid-1970s. During this time, methods and procedures have been identified and refined to minimize stress and impacts to wild horses during gather implementation. The SOPs in Appendix 5 would be implemented to ensure a safe and humane gather occurs and would minimize potential stress and injury to wild horses.

In any given gather, gather-related mortality averages only about one half of one percent (0.5%), which is very low when handling wild animals. Approximately, another six-tenths of one percent (0.6%) of the captured animals could be humanely euthanized due to pre-existing conditions and in accordance with BLM policy (GAO-09-77). These data affirm that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective, and practical means for the gather and removal of excess wild horses (and burros) from the public lands. The BLM also avoids gathering wild horses by helicopter during the 6 weeks prior to and following the peak foaling season (i.e., March 1 through June 30).

Individual, direct impacts to wild horses include the handling stress associated with the roundup, capture, sorting, handling, and transportation of the animals. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. When being herded to trap site corrals by the helicopter, injuries sustained by wild horses may include bruises, scrapes, or cuts to feet, legs, face, or body from rocks, brush or tree limbs. Rarely, wild horses will encounter barbed wire fences and will receive wire cuts. These injuries are very rarely fatal and are treated on-site until a veterinarian can examine the animal and determine if additional treatment is indicated.

Other injuries may occur after a horse has been captured and is either within the trap site corral, the temporary holding corral, during transport between facilities, or during sorting and handling. Occasionally, horses may sustain a spinal injury or a fractured limb but based on prior gather statistics, serious injuries requiring humane euthanasia occur in less than1 horse per every 100 captured. Similar injuries could be sustained if wild horses were captured through bait and/or water trapping, as the animals still need to be sorted, aged, transported, and otherwise handled following their capture. These injuries result from kicks and bites, or from collisions with corral panels or gates.

To minimize the potential for injuries from fighting, the animals are transported from the trap site to the temporary (or short-term) holding facility where they are sorted as quickly and safely as possible, then moved into large holding pens where they are provided with hay and water. On many gathers, no wild horses are injured or die. On some gathers, due to the temperament of the horses, they are not as calm and injures are more frequent. Overall, direct gather-related mortality averages less than 1%.

Indirect individual impacts are those which occur to individual wild horses after the initial event. These may include miscarriages in mares, increased social displacement, and conflict in studs. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief 1-2 minute skirmish between older studs

which ends when one stud retreats. Injuries typically involve a bite or kick with bruises which do not break the skin. Like direct individual impacts, the frequency of these impacts varies with the population and the individual. Observations following capture indicate the rate of miscarriage varies, but can occur in about 1 to 5% of the captured mares, particularly if the mares are in very thin body condition or in poor health.

A few foals may be orphaned during a gather. This can occur if the mare rejects the foal, the foal becomes separated from its mother and cannot be matched up following sorting, the mare dies or must be humanely euthanized during the gather, the foal is ill or weak and needs immediate care that requires removal from the mother, or the mother does not produce enough milk to support the foal. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the mother rejected it or died. These foals are usually in poor, unthrifty condition. Every effort is made to provide appropriate care to orphan foals.

BLM prohibits the use of a helicopter to assist in the removal of wild horses 6 weeks before and 6 weeks following the peak foaling period and that the peak foaling period is mid April to mid May for most herds, therefore, helicopter gathers are not generally conducted between March 1 and June 30.

Veterinarians may administer electrolyte solutions or orphan foals may be fed milk replacer as needed to support their nutritional needs. Orphan foals may be placed in a foster home in order to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

In some areas, gathering wild horses during the winter may avoid the stress that could be associated with a summer gather. By fall and winter, foals are of good body size and sufficient age to be easily weaned. Winter gathers are often preferred when terrain and higher elevations make it difficult to gather wild horses during the summer months. Under winter conditions, horses are often located in lower elevations due to snow cover at higher elevations. This typically makes the horses closer to the potential trap sites and reduces the potential for fatigue and stress. While deep snow can tire horses as they are moved to the trap, the helicopter pilots allow the horses to travel slowly at their own pace. Trails in the snow are often followed to make it easier for horses to travel to the trap site. On occasion, trails can be plowed in the snow to facilitate the safe and humane movement of horses to a trap.

In some areas, a winter gather may result in less stress as the cold and snow does not affect wild horses to the degree that heat and dust might during a summer gather. Wild horses may be able to travel farther and over terrain that is more difficult during the winter, even if snow does not cover the ground. Water requirements are lower during the winter months, making distress from heat exhaustion extremely rare. By comparison, during summer gathers, wild horses may travel long distances between water and forage and become more easily dehydrated.

Through the capture and sorting process, wild horses are examined for health, injury and other defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals meet the criteria and should be euthanized (refer to SOPs, Appendix 5). Animals that are euthanized for non-gather related reasons include those with old injuries (broken or deformed limbs) that cause lameness or prevent the animal from being able to maintain an acceptable body condition (greater than or equal to BCS 3); old animals that have serious dental abnormalities or severely worn teeth and are not expected to maintain an

acceptable body condition, and wild horses that have serious physical defects such as club feet, severe limb deformities, or sway back. Some of these conditions have a causal genetic component and the animals should not be returned to the range to prevent suffering, as well as to avoid amplifying the incidence of the problem in the population.

Wild horses not captured may be temporarily disturbed and moved into another area during the gather operation. With the exception of changes to herd demographics from removals, direct 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 awareness of human presence.

It is not expected that genetic health would be impacted by the Proposed Action. The AML range of (number) should provide for acceptable genetic diversity

By maintaining wild horse population size within the AML, there would be a lower density of wild horses across the HMA, reducing competition for resources and allowing wild horses to utilize their preferred habitat. Maintaining population size within the established AML would be expected to improve forage quantity and quality and promote healthy, self-sustaining populations of wild horses in a thriving natural ecological balance and multiple use relationship on the public lands in the area. Deterioration of the range associated with wild horse overpopulation would be avoided. Managing wild horse populations in balance with the available habitat and other multiple uses would lessen the potential for individual animals or the herd to be affected by drought, and would avoid or minimize the need for emergency gathers, which would reduce stress to the animals and increase the success of these herds over the long-term.

Transport, Short Term Holding, and Adoption (or Sale) Preparation
Approximately 30 excess horses would be removed. Animals would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s) or an approved fostering location. From there, they would be made available for adoption or sale to qualified individuals or to long-term holding (grassland) pastures.

Wild horses selected for removal from the range are transported to the receiving short-term holding facility in a 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 infections 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

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 re-sell 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 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 FY2011 appropriated funds.

Impacts of No Action Alternative

If No Action is taken, there would be no active management to maintain the population size within the established AML at this time and excess wild horses would not be removed from within or outside the Sulphur HMA at this time. The animals would not be subject to the individual direct or indirect impacts as a result of a gather, treat and release operation in December 2010. Wild horse populations would continue to grow at an average rate of 17-27 % per year. The current estimated population is above the upper AML. Without a gather and removal now, the population would continue to grow doubling the upper AML (500) within 3 years time. At that time, the BLM would be required to gather and remove approximately 330 excess wild horses. As the population continues to increase, individuals in the herds would be subject to increased stress and possible death as a result of increased competition for water and forage as the wild horse population continues to grow. The number of areas experiencing severe utilization by wild horses would increase over time. This would be expected to result in increasing damage to rangeland resources throughout the HMA. Trampling and trailing damage by wild horses in/around riparian areas and water sources would also be expected to increase, resulting in larger, more extensive areas of bare ground. Competition for the available water and forage between wild horses, domestic livestock, and native wildlife would increase.

Wild horses are a long-lived species with documented survival rates exceeding 92% for all age classes and do not have the ability to self-regulate their population size. Predation and disease have not substantially regulated wild horse population levels within or outside the Sulphur HMA. Some mountain lion predation occurs, but does not appear to be substantial. Coyote are not prone to prey on wild horses unless young, or extremely weak. Other predators such as wolf or bear do not exist within the HMA. As a result, there would be a steady increase in wild horse numbers for the foreseeable future, which would continue to exceed the carrying capacity of the range. Individual horses would be at greater risk of death by starvation and lack of water. The population of wild horses would compete for the available water and forage resources, affecting mares and foals most severely. Social stress would increase. Fighting among stud horses would increase as they protect their position at scarce water sources, as well as injuries and death to all age classes of animals.

Significant loss of the wild horses in the HMA due to starvation or lack of water would have obvious consequences to the long-term viability of the herd. Continued decline of rangeland health and irreparable damage to vegetative, soil and riparian resources, would have obvious impacts to the future of the HMA and all other users of the resources, which depend upon them for survival. As a result, the No Action Alternative would not ensure healthy rangelands, would not allow for the management of a healthy, self-sustaining wild horse population, and would not promote a thriving natural ecological balance.

As populations increase beyond the capacity of the available habitat, more bands of horses would leave the boundaries of the HMA in search of forage and water. This alternative would result in increasing numbers of wild horses in areas not designated for their use, would be contrary to the Wild Free-Roaming Horse and Burro Act and would not achieve the stated objectives for wild horse herd management areas, to "prevent the range from deterioration associated with overpopulation," and "preserve and maintain a thriving natural ecological balance and multiple use relationship in that area."

4.3 Cumulative Effects for All Alternatives

The NEPA regulations define cumulative impacts as impacts on the environment that 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 actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The cumulative impacts study area (CSA) for the purposes of evaluating cumulative impacts is the Sulphur HMA.

4.3 Past and Present Actions

The NEPA regulations define cumulative impacts as impacts on the environment that 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 actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The cumulative impacts study area (CSA) for the purposes of evaluating cumulative impacts is the North Hills HMA and the Forest Service Wild Horse Territory.

4.3 Past and Present Actions

The Past, Present, and Reasonably Foreseeable Future Actions applicable to the assessment area are identified as the following:

Table 8. Cumulative Impact Analysis

Project --Name/Description	Status		
	Past	Present	Future
Wild Free-Roaming Horse and Burro Act of 1971	X		
Wild Horse and Burro issues, issuance of Multiple use decisions AML adjustments and planning	X	X	X
Sulphur HMA Gather and Removals	X	X	X
Historic Livestock Grazing (1870 to 1934)	X		
Taylor Grazing Act (1934)	X		
Livestock Grazing Permit Renewals and authorizations (Atchison Creek, Hamblin, Bennion Spring, North Pine Valley, South Pine Valley, Indian Peak, Fairview and Stateline).	X	X	X
Wildlife Management	X	X	X
Vegetation Manipulation (Manipulation of vegetation from one type (P/J) to another (shrub/grassland) through the use of machines, hand cutting, planting, burning, and other approved methods.)	X	X	X
Wildfires/Wildfire Suppression and Rehabilitation	X	X	X
Recreation	X	X	X
Energy Development (Powerlines, Pipelines, Wind Energy, etc.)	X		X
Range Improvements (Water developments, fences, seedings, etc.)	X	X	X
Land Use Plans (Pinyon Management Framework Plan and Future Land Use Plans)	X	X	X

Any future proposed projects within the Sulphur HMA would be analyzed in an appropriate environmental document following site specific planning. Future project planning would also include public involvement.

Past actions include establishment of wild horse Herd Management Areas, establishment of AML for wild horses, wild horse gathers, energy development, livestock grazing and recreational activities throughout the area. Some of these activities have increased infestations of invasive plants, noxious weeds, and pests and their associated treatments.

4.3.1 Rangeland Health/Vegetation/Livestock Grazing

Livestock grazing in the region has evolved and changed considerably since it began in the 1870s, and is one factor that has created the current environment. At the turn of the century, large herds of livestock grazed on unreserved public domain in uncontrolled open range. Eventually, the range was stocked beyond its capacity, causing changes in plant, soil and water relationships. Some speculate that the changes were permanent and irreversible, turning plant communities from grass and herbaceous species to brush and trees. Protective vegetative cover was reduced, and more runoff brought erosion, rills and gullies.

In response to these problems, livestock grazing reform began in 1934 with the passage of the Taylor Grazing Act. Subsequent laws, regulations, and policy changes have resulted in adjustments in livestock numbers, season-of-use changes, and other management changes. Given the past experiences with

livestock impacts on resources on Public Lands, as well as the cumulative impacts that could occur on the larger ecosystem from grazing on various public and private lands in the region, management of livestock grazing is an important factor in ensuring the protection of Public Land resources.

The effects of historic livestock grazing within the Allotments led to a determination in the Pinyon Framework Management Plan to manage the allotments as follows:

Intensive Management Allotments: Atchison Creek, Bennion Spring, North Pine Valley, and Indian Peak

Maintenance Management Allotments: South Pine Valley, Atchison Creek

In the Warm Spring Resource Management Plan to manage the allotments as follows:

Intensive Management Allotments: Hamblin and Fairview

Maintenance Management Allotments: Stateline

Past range improvements including fences (others) have been completed in the allotments. Range improvements are valuable to livestock managers, allowing permittees to control livestock distribution and limiting concentrations.

4.3.3 Wildfires/Vegetative Manipulation

Wildfires are common throughout southern Utah. Wildfire suppression activities and rehabilitation efforts are often associated with the occurrence of wildfires. Manipulation of vegetation from one type (P/J) to another (shrub/grassland) through the use of machines, hand cutting, planting, burning, and other approved methods has occurred throughout the area adjacent to the HMA . Rehabilitation of areas consumed by wildfires, and vegetative manipulation has occurred in and around the HMA. These activities have had long term beneficial impacts to the vegetative resources in the area. Ground cover and forage species have increased in the areas where these activities have occurred. The increase in forage species have been of benefit to the wild horses, wildlife and livestock that use the area.

4.3.2 Soils

Most of the soils work that has been completed within the field office area is related to vegetation treatment projects where soil conditions generally improve over time. Many of the livestock grazing rotation systems and allotment management plans that have been developed within the Pinyon Planning Unit have indirectly benefitted the soil resource. Utilization levels established in recently completed grazing permit renewal efforts should show positive results for soil conditions given some time. Some structural projects such as rock gabions have been placed in eroding gullies and riparian washes for stabilization of very localized situations in the past. The effects of wild horses on soils have been cumulative with wildlife and livestock use in the past. Again, the level of impact from each category of grazer is unknown. Other activities which are soil disturbing in the gather area would include such things as vegetation treatments, fire rehabilitation efforts, dirt and off road travel, powerline and pipeline construction, etc. The alternative A would help to lessen cumulative impacts. While the No Action alternative would obviously increase the impacts.

4.3.3 Wildlife

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Historic grazing (wild horses and wildlife) has resulted in decreased habitat values for wildlife within the Sulphur HMA. In areas where the native understory vegetation has been depleted or vegetation disturbance has occurred cheatgrass has increased and in some locations has become the dominant species. Invasive species such as annual cheatgrass deplete the quality of the habitat to meet wildlife needs.

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Direct impacts are expected to be minimal as a result of timing and duration of the gather, however some impacts could occur. Removal of the wild horse populations would reduce competition between big game and wild horses. Direct competition between wild horses, big game and other wildlife would continue to occur for perennial grasses, forbs, water and shelter.

Declines in migratory bird populations are becoming well documented through cooperative efforts among conservation groups, federal, and state agencies and can be attributed to many factors such as habitat fragmentation (breeding and non-breeding habitat), alteration of vegetative communities, urban expansion, natural disasters and brood parasitism. Migratory birds are also impacted by human disturbance associated with land use and recreational activities.

4.3.4 Wild Horses

In 1971 Congress passed the Wild Free-Roaming Horse and Burro Act which placed wild and free-roaming horses, that were not claimed for individual ownership, under the protection of the Secretaries of Interior and Agriculture. The act provided protection, but no appropriation for the management of wild horses. In 1976 the FLPMA gave the Secretary the authority to use motorized equipment in the capture of wild free-roaming horses as well as continued authority to inventory the public lands. In 1978, the Public Range Improvement Act (PRIA) was passed which gave the BLM a direction for management as well as approved appropriation authority for management of wild and free-roaming horses on public lands.

In 1971, Herd Areas were identified as areas being occupied by wild horses. Herd Management Areas (HMAs) were established in the 1980s through the Pinyon Management Framework Plan.

The Cedar City Field Office has records of nine (13) wild horse gathers and removals have occurred since 1971 within the Sulphur HMA, removing approximately 1387 wild horses from area. The average population increase in the Sulphur HMA has been between 17-28% a year with some of the variance in the population increase where excess horses from outside of the HMA have come into the area.

4.3.5 Recreation

Common recreational activities in the allotments include occasional ATV riding, hiking, hunting, wildlife and wild horse viewing. Cumulative impacts are not likely to impact these recreational activities. Improved wildlife habitat as a result of achieving AML in the Sulphur HMA may lead to greater opportunity for viewing or hunting wildlife. Wild horse viewing may be reduced due to decreased concentrations of wild horses in areas accessible to the public.

4.4 Reasonably Foreseeable Future Actions

4.4.1 Rangeland Health/Vegetation/Livestock Grazing

Livestock grazing is expected to continue at similar stocking rates, season of use, kind of livestock and utilization objectives as developed in recent permit renewals. Continuing to graze livestock in a manner consistent with grazing permit terms and conditions would be expected to achieve, maintain, and make significant progress towards achieving Land Health Standards.

Production, line-intercept, frequency, and utilization data would continue to be collected for future rangeland management actions. Rangeland Health Assessments for allotments associated with this area would be completed again within the next 10 years.

In the future permit renewals and livestock grazing evaluations would be completed on the Atchison Creek, Hamblin, Bennion Spring, North Pine Valley, South Pine Valley, Indian Peak, Fairview and Stateline Allotments on a 10 cycle. Changes to the permitted livestock use on each of these allotments would be made at that time. Issuance of grazing permits would be completed through appropriate NEPA analysis.

Range improvement projects may be proposed in the future. Water developments and fences aid in distributing livestock. Water developments would provide an additional water source to wild horses. Construction of fences within Sulphur HMA could inhibit the free-roaming nature of wild horses. All future range improvement projects would be analyzed through site specific NEPA analysis within a multiple-use concept.

Wildfires and wildfire rehabilitation could impact livestock grazing within the Atchison Creek, Hamblin, Bennion Spring, North Pine Valley, South Pine Valley, Indian Peak, Fairview and Stateline Allotments. Forage loss as a result of wildfires may result in temporary reductions in livestock permitted use to allow for recovery of vegetative resources. Wildfire rehabilitation activities may also result in burned areas being closed off to livestock grazing until vegetation conditions meet fire rehabilitation objectives.

4.4.2 Soils

RFFA's that would affect soils include grazing permit renewals which allow continued use of livestock grazing across the landscape. It is likely that permits would include best management practices for vegetation, including implementation of terms and conditions to (in most cases) lessen the amount of grazing utilization that would be allowed to occur. Range improvement projects are anticipated to be analyzed through the permit renewal process. These would have the effect of disturbing soil surfaces. Wildlife contribute the same type of effects that wild horses have on soils. Any on road or off-road travel is a soil compacting activity, which cumulatively, could be substantial. Other RFFA's in the gather area most likely to affect the soil resource are road construction related to mining or right-of-way (ROW) development, including such things as major powerlines, pipelines, wind farms, etc. Bureau initiated projects such as fire rehabilitation and vegetation treatments (decreased fuel loading, stewardship contracts, etc.) are anticipated in the future and these would also create cumulative impacts to soils.

4.4.3 Wildlife

Past, present and future projects with regards to properly planned vegetation and wildlife habitat improvement, invasive weed treatment, and range improvement are beneficial for wildlife. These projects

generally ensure the quality of habitat and forage for wildlife species.

Direct competition between wild horses, mule deer and other wildlife will continue to occur for perennial grasses. Forbs, water and shelter.

Wild horse populations have and would continue to influence the available forage for wildlife. As wild horse populations increase the competition between wildlife and wild horses for limited resources would increase. As wild horses and wildlife are managed within the population goals and appropriate management levels (AML) this competition would be reduced.

Abundance of small bird, mammal and reptile populations can be reduced because of habitat alteration. Wild horses can reduce the vegetation cover required to support adequate prey populations however, lower ground cover makes prey more easily seen and captured by owls.

4.4.4 Wild Horses

In the future, the CCFO would continue to inventory wild horse populations within established HMA. Wild horses would continue to be an integral component of public lands, managed within a multiple-use concept within HMAs.

Population data collected during the Proposed Action would enable Wild Horse Specialists to monitor the herds and make management decisions to maintain genetic diversity within the Sulphur HMA with historical or desirable herd characteristics, and population demographics. Future removals within the Sulphur HMA would utilize this information and provide baseline data for future NEPA analysis.

Over the next 10-15 year period, reasonably foreseeable future actions include gathers about every 4 years to remove excess wild horses in order to manage population size within the established AML range. Cumulatively over the next 10-15 years, fewer gathers should result and less frequent disturbance to individual wild horses and the herd's social structure would occur. Individual and herd health would be maintained. Population control methods could also be implemented during future gathers. Any future wild horse management would be analyzed in appropriate environmental documents following site-specific planning with public involvement.

Other reasonably foreseeable future actions include the transport, handling, care, and disposition of the excess wild horses removed from the range. Initially wild horses would be transported from the capture/temporary holding corrals to a designated BLM short-term holding corral facility. From there, the animals would be made available for adoption or sale to individuals who can provide a good home, or to long-term holding pastures in the Midwest. For additional information about the potential impacts associated with short or long-term holding, preparation, adoption and/or sale.

Wildfires and wildfire rehabilitation could impact wild horse habitat within the Sulphur HMA. Wild horses may be displaced during wildfires and concentrate in non-burned areas until green-up occurs within the burn at which time it is not uncommon for wild horses, livestock, and wildlife to concentrate in these areas. It is not uncommon to exclude burned areas from grazing until vegetation is allowed to recover. Wild horse management decisions within the Sulphur HMA regarding wildfire and wildfire rehabilitation efforts would depend on the extent of habitat loss incurred.

The gather area contains a variety of resources and supports a variety of uses. Any alternative course of

wild horse management has the opportunity to affect and be affected by other authorized activities ongoing in and adjacent to the area. Future activities which would be expected to contribute to the cumulative impacts of implementing the Proposed Action include: future wild horse gathers, continuing livestock grazing in the allotments within the area, development of range improvements, continued development of mineral extraction, oil and gas exploration, new or continuing infestations of invasive plants, noxious weeds, and pests and their associated treatments, and continued native wildlife populations and recreational activities historically associated with them. The significance of cumulative effects based on past, present, proposed, and reasonably foreseeable future actions are determined based on context and intensity.

4.5 Summary of Past, Present, and Reasonably Foreseeable Future Actions

Impacts Common to the Proposed Action Alternative

Cumulative effects expected when incrementally adding either of the action alternatives to the area of potential effect would include continued improvement of upland vegetation conditions, which would in turn benefit permitted livestock, native wildlife, and wild horse population as forage (habitat) quality and quantity is improved over the current level. Application of fertility control and/or adjustment in sex ratios to favor males should slow population growth and result in fewer gathers and less frequent disturbance to individual wild horses and the herd's social structure. However, return of wild horses back into the HMA could lead to increased difficulty and greater costs to gather horses in the future as released horses learn to evade the helicopter.

The cumulative effects associated with the capture and removal of excess wild horses or the application of fertility control vaccine to release mares includes gather-related mortality of less than 1% of the captured animals, about 5% per year associated with transportation, short term holding, adoption or sale with limitations and about 8% per year associated with long-term holding. This compares with natural mortality on the range ranging from about 5-8% per year for foals (animals under age 1), about 5% per year for horses ages 1-15, and 5-100% for animals age 16 and older (Stephen Jenkins, 1996, Garrott and Taylor, 1990). In situations where forage and/or water are limited, mortality rates increase, with the greatest impact to young foals, nursing mares and older horses. Animals can experience lameness associated with trailing to/from water and forage, foals may be orphaned (left behind) if they cannot keep up with their mare, or animals may become too weak to travel. After suffering, often for an extended period, the animals may die. Before these conditions arise, the BLM generally removes the excess animals to prevent their suffering from dehydration or starvation.

Cumulatively, there should be more stable wild horse populations, less competition for limited forage and water resources, healthier rangelands, and wild horses, and fewer multiple use conflicts in the area over the short and long-term. Over the next 10-20 years, continuing to manage wild horses within the established AML range would achieve a thriving natural ecological balance and multiple use relationship on public lands in the area.

Impacts of the No Action Alternative

Under the No Action Alternative, the wild horse population would exceed 500 head in four years. Increased movement outside the HMA would be expected as greater numbers of horses search for food and water. Heavy to excessive utilization of the available forage would be expected and the water available for use could become increasingly limited. Emergency removals could be expected in order to prevent

individual animals from suffering or death as a result of insufficient forage and water. Cumulative impacts would result in foregoing the opportunity to improve rangeland health and to properly manage wild horses in balance with the available forage and water and other multiple uses. Attainment of site-specific vegetation management objectives and Standards for Rangeland Health would not be achieved. AML would not be achieved and the opportunity to collect the scientific data necessary to re-evaluate AML levels, in relationship to rangeland health standards, would be foregone.

5.0 Monitoring and Mitigation Measures

Proven measures to mitigate impacts of the gather on wild horses and on rangeland resources, along with monitoring are incorporated into the proposed action through standard operating procedures, which have been developed over time. These SOPs (Appendix 5 and 6) represent the "best methods" for reducing impacts associated with gathering, handling, and transporting wild horses and for collecting herd data. Hair samples to compare to the genetic baseline for the Sulphur HMA wild horses may be collected; additional samples will be collected during future gathers (in 10-15 years) to determine trend. Should monitoring indicate genetic diversity is not being adequately maintained, 2-10 mares and/or studs from HMAs in similar environments would be added every generation (every 8-10 years) to avoid inbreeding depression/maintain acceptable genetic diversity. Ongoing resource monitoring, including climate (weather), and forage utilization, population inventory, and distribution data will continue to be collected.

6.0 List of Preparers

Those responsible for completing this EA are listed as part of the Interdisciplinary Team Record (Appendix 1).

Chad Hunter (BLM-CCFO-Rangeland Management/Wild Horse Specialist) – Team Leader, Vegetation, Livestock Grazing, Wild Horses

Sheri Whitfield (BLM-CCFO-Wildlife Biologist) – Special Status Species (T&E), Wildlife.

Kevin Wright (BLM-CCFO-Rangeland Management Specialist) – Riparian/Wetlands, Livestock Grazing.

Jessica Bulloch (BLM-CCFO-Natural Resource Specialist) – Rangeland Standards and Guidelines, Livestock Grazing, Invasive Species

Craig Egerton (BLM-CCFO-Natural Resource Specialist) – Rangeland Standards and Guidelines, soils, Forestry, Water resources.

Kent Dastrup (BLM-CCFO-GIS Specialist) – GIS Support, Maps, Tables

7.0 Consultation and Coordination

Public involvement was initiated at Utah's public hearing for the use of helicopters and motorized vehicles. The Utah State Office held a public hearing about the use of helicopters and motorized vehicles to capture and transport wild horses (or burros) on June 9, 2010. The meeting was held at the BLM's Salt

Lake Field Office in Salt Lake City, Utah. This specific gather was addressed as one of many gathers that may occur within the state of Utah over the next 12 months. This meeting was advertised in papers and radio stations state wide. The meeting was attended by 12members of the public and media. No comments were received at that meeting specific to the use of motorized helicopters and motorized vehicles in the management of wild horses and burros in Utah. No comments were received about this proposed action or the alternatives in the document. BLM reviewed its Standard Operating Procedures in response to the views and issues expressed at the hearing and determined that no changes to the SOPs were warranted.

Additional public involvement was includes the posting of this Proposed Action on July 1, 2010 on ENBB. A preliminary EA was posted on the ENBB and distributed to interested parties for a 30 day comment period. As of the date of this document no interested public or organization has contacted the CCFO BLM about this project.

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7.1 Persons, Groups, & Agencies Consulted

Ronald G. Torgerson
State of Utah School and Institutional Trust Lands Administration (SITLA)

Gus Warr
BLM-USO-Wild Horse and Burro State Lead

Eric Reid
BLM-Fillmore Field Office-Wild Horse and Burro Specialist

Alan Shepherd
BLM-WYSO-Wild Horse and Burro State Lead

Dorena Martineau
Paiute Indian Tribe of Utah –Cultural Resources

8.0 Public Involvement

A preliminary Gather Plan EA was provided to the public for 30 day review/comment period beginning on September 24, 2010 and ending October 24, 2010. The comments received during this period will be summarized and address (if necessary) in Appendix 8.

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10.0 Appendices

Appendix 1

INTERDISCIPLINARY TEAM CHECKLIST

Project Title: Sulphur Herd Management Area Wild Horse Gather

NEPA Log Number: DOI-BLM-UT-C010-2010-0048-EA

File/Serial Number:

Project Leader: Chad Hunter

DETERMINATION OF STAFF: ***(Choose one of the following abbreviated options for the left column)***

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA
NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

Determi-nation	Resource	Rationale for Determination	Signature	Date
RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)				
NI	Air Quality	Air quality in the area is good as is typical of relatively undeveloped areas of the western U.S. Nothing in the proposal would affect current conditions.	C. Egerton	7/12/10
NP	Areas of Critical Environmental Concern	None within Field Office boundaries.	C. Hunter	7/22/10
NP	BLM Natural Areas	None within Field Office boundaries.	C. Hunter	7/22/10
NI	Cultural Resources	This gather will have **no effect** to significant cultural resources. The corral location will be located on an area of existing disturbance, such as road or a wash. The possibility of finding intact cultural resources in these areas is minimal to non-existent. If an existing disturbed area cannot be located for the corral area, a cultural resource inventory will take place prior to the gather. If cultural resources are located during this	N. Thomas	7/12/10

		inventory, the corral area will be moved to another location, which does not contain cultural resources.		
NI	Greenhouse Gas Emissions	All alternatives except no action would involve burning fossil carbon based fuels (which would produce byproducts such as CO2, water vapor, etc.) to conduct removal operations. Emission levels would be so minor as to be unmeasurable. Ongoing research has identified the potential effects of so-called "greenhouse gas" (ghg) emissions (including CO2, methane, nitrous oxide, water vapor and several trace gasses) on global climate. The release of these gasses during activities related to wild horse management is cumulative with other local, regional and global releases. The lack of scientific tools to predict climate change on regional or local scales limits the ability to quantify potential future impacts as a result of this singular proposal or cumulatively with other activities within the analysis area with any confidence. On a regional scale, selection of any alternative would not contribute substantially to local ghg emissions.	C. Egerton	07/12/10
NI	Environmental Justice	No minority or economically disadvantaged groups would be affected	Chad Hunter	7/8/10
NP	Farmlands (Prime or Unique)	There is no soil survey completed for this area. There are likely soils in the herd unit capable of being prime or unique farmlands, however only when irrigation water is supplied. Where there is no irrigation water supplied, there are no prime or unique farmlands present.	C. Egerton	7/14/10
NI	Fish and Wildlife Excluding Threatened, Endangered, Candidate and Sensitive Species	The area is identified as crucial winter and summer range for the mule deer. The area is also considered important yearlong range for pronghorn and elk. Wild turkey habitat is identified to occur within the HMA.	S. Whitfield	7/20/10
NI	Floodplains	Nothing in the proposal would affect the functioning of a floodplain, therefore the action is consistent with Executive Order 11988.	C. Egerton	7/14/10
NI	Fuels / Fire Management	There would be no impacts to Fire/Fuels Management.	M. Mendenhall	7/8/10
NI	Geology / Mineral Resources/Energy Production	The brevity and superficial nature of the proposed action precludes it from having any substantial impact on any mineral resources or ongoing mineral exploration/development activity that may	Ed Ginouves	7/9/10

		be present in the proposed project area.		
PI	Hydrologic Conditions	Hydrologic conditions are variable throughout the Sulphur HMA, but in general are thought to be relatively good. Specific soil information for these allotments may be found in the NRCS soils survey for Iron, Beaver, and Millard Counties. A review of available data has been completed and none of these allotments contain critical or severe erosion condition class acreages. Field examination of some of the allotments during rangeland health evaluations revealed small areas with a moderate departure from normal in soil stability. Active gullying was occurring. It is unknown how much wild horses contribute to this particular problem, but it is suspected to be minimal. See EA text under "soils" for more details.	C. Egerton	07/14/10

Determi-nation	Resource	Rationale for Determination	Signature	Date
NI	Invasive Species/Noxious Weeds	As long as there is a stipulation (as in the SOPs) of the use of weed free hay during any bait trapping, and for any feeding purposes of wild horses and/or domestic horses at the gather site or at holding areas on public land.	J. Bulloch	714/10
NI	Lands/Access	Any pending or authorized lands and realty actions in the wild horse gather area would not be substantially affected by the proposed action.	B. Johnson	7/12/10
PI	Livestock Grazing	Livestock and wild horses compete directly for vegetative, water, and cover resources. Higher populations of wild horses mean more competition with livestock. Wild horse populations that are within AML reduce competition. When wild horse populations are above AML the livestock numbers must be reduced to not over utilize the vegetative and water resources.	Chad Hunter	7/8/10
NI	Migratory Birds	The Gather would occur outside of the migratory bird nesting season.	S. Whitfield	7/20/10
NI	Native American Religious Concerns	The Paiute Indian Tribe of Utah and the appropriate band have reviewed the project and have no objection to the project going forward and request they be informed of any changes or updates to the project.	Rachel Tueller	07/13/10

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NI	Paleontology	The surficial geology of the lands in the proposed project area fall within Class 1 and Class 2, very low and low potential, respectively, for vertebrate or scientifically significant invertebrate fossils. That, together with the superficial nature of any surface disturbance activity associated with the proposed projects precludes any impact to paleontological resources.	Ed Ginouves	7/9/10
PI	Rangeland Health Standards	This is addressed as part of the rangeland heath/vegetation section of the ea and in other resource sections such as riparian.	Chad Hunter	7/8/10
NI	Recreation	Recreation in the project area is dispersed, and some displacement may occur during gather operations, however impacts will not be substantial. Coordination is necessary with the Utah Division of Wildlife Resources to notify public of operations, and to avoid conflicts during hunting season.	E. Burghard	08/06/10

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NI	Socio-economics	The proposed action will not in its self change the socio-economics of the area.	Chad Hunter	7/8/10
PI	Soils	Under the current situation (horses above AML), inadequate residual vegetation (forage) and litter remain on certain key use areas in the herd unit. This directly affects the soil's exposure to erosive elements such as wind and water. A reduction in horse numbers would allow additional vegetation to remain on these key areas, thus providing additional protection to the soil surface. Address more in EA.	C. Egerton	7/14/10
PI PI	Threatened, Endangered, Candidate or Sensitive Animal Species	Utah prairie dog – There are no known occurrences within the Sulphur HMA boundary, however prairie dogs do occur within 9 miles of gather activities. Candidate species – Winter habitat is identified in the HMA for the Greater sage-grouse. 2 active sage-grouse leks occur within the Sulphur HMA and another active lek is within .5 mile from the HMA. If the gather occurs after the February 15th, then appropriated buffers and restrictions will apply to avoid any impacts. Known location where the species occur would be avoided for trap and holding facilities. Trap/holding facilities/staging area would be placed in previously disturbed areas. Special Status species that potentially occur within the Sulphur HMA include; bald eagle, burrowing owl, ferruginous hawk and short-eared owl. New trap sites established in undisturbed areas would need to be cleared for special status animal species. Pygmy rabbits locations have been identified to occur within the Sulphur HMA. Known locations where these species occur would be avoided for trap and holding facilities. Trap/holding facilities/staging areas would be placed in previously disturbed areas. If a new trap or holding facility is identified a wildlife site inventory may be required prior to the gather.	S. Whitfield	7/20/10
NP	Threatened, Endangered, Candidate or	The CCFO does not have any Threatened, Endangered or Candidate plant species.	Sheri Whitfield	7/8/10

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NI	Sensitive Plant Species	There are two identified SS plant species (*Astragalus oophorus and Ivesia shockleyi osterli*) both occurring in Beaver County of the Sulpher HMA area. Known locations where these species occur would be avoided for trap and holding facilities. Trap/holding facilities/staging areas would be placed in previously disturbed areas. Due to the season of the gather it is expected that there will be no impact to sensitive plants.		
NI	Wastes (hazardous or solid)	The proposal should not produce any hazardous or solid wastes. Should any release occur, all State and Federal regulations shall be followed.	R. Peterson	7/22/10
NI	Water Resources/Quality (drinking/surface/ground)	Project proposal would not substantially impact water quality. Project stipulations would minimize adverse impacts to water quality resulting from water trapping operations. It would be desirable to remove horses as soon as practical from any water trap areas. While surface waters in the herd management area are likely meeting water quality standards for most waters, a reduction in wild horse numbers would further improve water quality (sedimentation and fecal coliforms).	C. Egerton	7/12/10
PI	Wetlands/Riparian Zones	SOPs for the gather would have limited to no impacts on riparian wetland zones. Long term impacts of population control of wild horse herds would improve overall functionality of riparian/wetland areas in the Sulpher HMA	K Wright	7/13/10
NP	Wild and Scenic Rivers	None within Field Office boundaries.		
NI	Wilderness/WSA	The White Rock wilderness study area is within the project area boundary. Placement of gather sites in previously disturbed areas, and along existing roads would ensure no impacts to wilderness.	E. Burghard	08/08/10
NI	Woodland / Forestry	No substantial impacts are anticipated on forest/woodland vegetation via gather activities. The proposed action would reduce animal impacts to vegetation in the area and thereby contribute to improved vigor, etc. of understory species, but really little impact on overstory (woodland) species.	Craig Egerton	7/12/10
NI	Vegetation Excluding	The area is considered mule deer summer and winter range, yearlong range for pronghorn and	S. Whitfield	7/20/10

	Threatened, Endangered, Candidate and Sensitive Species	elk. The area is also wild turkey habitat.		
NI	Visual Resources	The proposed action includes only minor temporary disturbance. The action will not measurable impact visual resources.	E. Burghard	08/06/10
PI	Wild Horses and Burros	See proposed action and EA	Chad Hunter	7/8/10
NI	Areas with Wilderness Characteristics	Placement of gather sites in previously disturbed areas, and along existing roads would ensure no impacts to areas which may have wilderness characteristics.	E. Burghard	08/06/10

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator			
Authorized Officer			

Appendix 2.
Fundamentals of Rangeland Health

The Fundamentals of Rangeland Health stated in 43 CFR 4180 are:

1. Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity and the timing and duration of flow.

2. Ecological processes, including the hydrologic cycle, nutrient cycle and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.

3. Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established Bureau of Land Management objectives such as meeting wildlife needs.

4. Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidate and other special status species.

The fundamentals of rangeland health combine the basic precepts of physical function and biological health with elements of law relating to water quality, and plant and animal populations and communities. They provide direction in the development and implementation of the standards for rangeland health.

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Appendix 3.

Utah Standards for Rangeland Health (1997)

Standard 1. **Upland soils exhibit permeability and infiltration rates that sustain or improve site productivity, considering the soil type, climate, and landform.**

As indicated by:

a) Sufficient cover and litter to protect the soil surface from excessive water and wind erosion, promote infiltration, detain surface flow, and retard soil moisture loss by evaporation.

b) The absence of indicators of excessive erosion such as rills, soil pedestals, and actively eroding gullies.

c) The appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community [DPC], where identified in a land use plan, or (2) where the DPC is not identified, a community that equally sustains the desired level of productivity and properly functioning ecological conditions.

Standard 2. **Riparian and wetland areas are in properly functioning condition. Stream channel morphology and functions are appropriate to soil type, climate and landform.**

As indicated by:

a) Streambank vegetation consisting of, or showing a trend toward, species with root masses capable of withstanding high streamflow events. Vegetative cover adequate to protect stream banks and dissipate streamflow energy associated with high-water flows, protect against accelerated erosion, capture sediment, and provide for groundwater recharge.

b) Vegetation reflecting: Desired Plant Community, maintenance of riparian and wetland soil moisture characteristics, diverse age structure and composition, high vigor, large woody debris when site potential allows, and providing food, cover and other habitat needs for dependent animal species.

c) Revegetating point bars; lateral stream movement associated with natural sinuosity; channel width, depth, pool frequency and roughness appropriate to landscape position.

d) Active floodplain.

Standard 3. **Desired species, including native, threatened, endangered, and special-status species, are maintained at a level appropriate for the site and species involved.**

As indicated by:

a) Frequency, diversity, density, age classes, and productivity of desired native species necessary to ensure reproductive capability and survival.

b) Habitats connected at a level to enhance species survival.

c) Native species reoccupy habitat niches and voids caused by disturbances unless management objectives call for introduction or maintenance of nonnative species.

d) Appropriate amount, type, and distribution of vegetation reflecting the presence of (1) the Desired Plant Community [DPC], where identified in a land use plan conforming to these Standards, or (2) where the DPC is identified a community that equally sustains the desired level of productivity and properly functioning ecological processes.

Standard 4. **BLM will apply and comply with water quality standards established by the State of Utah (R.317-2) and the Federal Clean Water and Safe Drinking Water Acts. Activities on BLM Lands will support the designated beneficial uses described in the Utah Water Quality Standards (R.317-2) for surface and groundwater.** [1]

As indicated by:

a) Measurement of nutrient loads, total dissolved solids, chemical constituents, fecal coliform, water temperature and other water quality parameters.

b) Macro-invertebrate communities that indicate water quality meets aquatic objectives.

[1] BLM will continue to coordinate monitoring water quality activities with other Federal, State and technical agencies.

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Appendix 4.

Utah Guidelines for Grazing Management (1997)

1. Grazing management practices will be implemented that:

(a) Maintain sufficient residual vegetation and litter on both upland and riparian sites to protect the soil from wind and water erosion and support ecological functions;

(b) Promote attainment or maintenance of proper functioning condition riparian/wetland areas, appropriate stream channel morphology, desired soil permeability and infiltration, and appropriate soil conditions and kinds and amounts of plants and animals to support the hydrologic cycle, nutrient cycle and energy flow;

(c) Meet the physiological requirements of desired plants and facilitate reproduction and maintenance of desired plants to the extent natural conditions allow;

(d) Maintain viable and diverse populations of plants and animals appropriate for the site;

(e) Provide or improve, within the limits of site potentials, habitat for Threatened or Endangered Species;

(f) Avoid grazing management conflicts with other species that have the potential of becoming protected or special status species;

(g) Encourage innovation, experimentation and the ultimate development of alternatives to improve rangeland management practices;

(h) Give priority to rangeland improvement projects and land treatments that offer the best opportunity for achieving the Standards.

2. Any spring or seep developments will be designed and constructed to protect ecological process and functions and improve livestock, wild horse and wildlife distribution.

3. New rangeland projects for grazing will be constructed in a manner consistent with the Standards. Considering economic circumstances and site limitations, existing rangeland projects and facilities that conflict with the achievement or maintenance of the Standards will be relocated and/or modified.

4. Livestock salt blocks and other nutritional supplements will be located away from riparian/wetland areas or other permanently located, or other natural water sources. It is recommended that the locations of these supplements be moved every year.

5. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands non-intrusive,
non-native plant species are appropriate for use where native species (a) are not available, (b) are not

economically feasible, can not achieve ecological objectives
as well as nonnative species, and/or (d) cannot compete with already established native species.

6. When rangeland manipulations are necessary, the best management practices, including biological processes, fire and intensive grazing, will be utilized prior to
the use of chemical or mechanical manipulations.

7. When establishing grazing practices and rangeland improvements, the quality of the outdoor recreation experience is to be considered. Aesthetic and scenic
values, water, campsites and opportunities for solitude are among those considerations.

8. Feeding of hay and other harvested forage (which does not refer to miscellaneous salt, protein and other supplements) for the purpose of substituting for inadequate natural forage will not be conducted on BLM lands other than in (a) emergency situations where no other resource exists and animal survival is in jeopardy, or (b) situations where the Authorized Officer determines such a practice will assist in meeting a Standard or attaining a management objective.

9. In order to eliminate, minimize or limit the spread of noxious weeds, (a) only hay cubes, hay pellets or certified weed-free hay will be fed on BLM lands, and (b) reasonable adjustments in grazing methods, methods of transport and animal husbandry practices will be applied.

10. To avoid contamination of water sources and inadvertent damage to non-target species, aerial application of pesticides will not be allowed within 100 feet of a riparian/wetland area unless the product is registered for such use by the EPA.

11. On rangelands where a standard is not being met, and conditions are moving toward meeting the standard, grazing may be allowed to continue. On lands where a standard is not being met, conditions are not improving toward meeting the standard or other management objectives, and livestock grazing is deemed responsible, administrative action with regard to livestock will be taken by the Authorized Officer pursuant to CFR 4180.2(c).

12. Where it can be determined that more than one kind of grazing animal is responsible for failure to achieve a Standard, and adjustments in management are required, those adjustments will be made to each kind of animal, based on interagency cooperation as needed, in proportion to their degree of responsibility.

13. Rangelands that have been burned, seeded or otherwise treated to alter vegetative composition will be closed to livestock grazing as follows: (1) burned rangelands, whether by wildfire or prescribed burning, will not be grazed for a minimum of one complete growing season following the burn; and (2) rangelands that have been seeded or otherwise chemically or mechanically treated will not be grazed for a minimum of two complete growing seasons.

14. Conversions in kind of livestock (such as from sheep to cattle) will be analyzed in light of Rangeland Health Standards. Where such conversions are not adverse to achieving a Standard, or they are not in conflict with BLM land use plans, the conversion will be allowed.

Appendix 5.

Standard Operating Procedures for Conducting Wild Horse Gathers

(Methods for Humane Capture of Wild Horses from the Sulphur HMA)
(FLPMA – 16 USC 1338a, Wild Horse and Burro Handbook – H-4710-1, 43 CFR 4700)

The gather method employed for this capture operation requires that horses be herded to a trap of portable panels and on extremely rare occasions to ropers who, after roping the animal, will bring it to the trap or have a trailer taken to the roped animal. Gathering would be conducted by using agency personnel or contractors experienced in the humane capture and handling of wild horses. The same rules apply whether a contractor or BLM personnel are used. The following stipulations and procedures will be followed during the contract period to ensure the welfare, safety and humane treatment of the wild horses in accordance with the provisions of 43 CFR 4700.

1. Capture Methods That May Be Used in the Performance of a Helicopter Gather

a. Helicopter Drive Trapping

This capture method will involve driving horses into a pre-constructed trap using a helicopter. The trap is constructed of portable steel panels consisting of round pipe. Wings are constructed off the ends of the panel trap to aid in funneling horses into the trap. The wings are constructed of natural jute, (or similar netting which will not injure a horse), which is hung on either trees or steel T-posts. This sort of wing forms a very effective visual barrier to the horses that they typically will not run through. When the trap is ready for use, a helicopter will start moving horses toward the trap and into the wings.

In heavily wooded areas, it may be necessary to use wranglers in support of the helicopter to move the horses. The helicopter will act more as a spotter for the ground crew in this situation.

The contractor/BLM shall attempt to keep bands intact except where animal health and safety become considerations which would prevent such procedures. The contractor/BLM shall ensure that foals shall not be left behind.

At least one saddle-horse should be immediately available at the trap site to perform roping if necessary. Roping shall be done as determined by the Contracting Officer's Technical Representative (COTR) or Project Inspector (PI). Under no circumstances shall animals be tied down for more than one hour.

Domestic saddle horses may also be used to assist the helicopter pilot (on the ground) during the gather operation, by having the domestic horse act as a pilot (or "Judas") horse on the ground, leading the wild horses into the trap site. Individual ground hazers and individuals on horseback may also be used to assist in the gather.

b. Helicopter Assisted Roping

Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. Under no circumstances shall horses or burros be tied down for more than one hour.

Roping shall be performed in such a manner that bands will remain together. Foals shall not be left behind.

2. Other Non-Helicopter Capture Methods

a. Water Trapping

This method involves setting up a trap around a well used water source and employing a self-closing gate with a triggering device or finger gates. Finger gates can be used only with the prior approval and under the supervision of the COTR/PI. Water traps equipped with trip wires would be checked every 10 hours for trapped animals. Water traps may also be manually closed using a pull rope, which requires personal to be at the trap site to close the gate.

It may be necessary to exclude access to other neighboring water sources to encourage use by the target population at the trap site. All exclosures constructed for the purpose of the gather would be flagged and highly visible to the horses, wildlife, and the public. The wires, twine, and flagging would be promptly removed following completion of the trapping.

All water traps and exclosures would be constructed (whenever possible) to accommodate wildlife access points. These points would be where wildlife could get to water by going underneath the panels, such as along trails, washes or low spots.

Placement of portable corral panels would be permitted during foaling season to allow wild horses to become accustomed to them.

b. Bait Trapping

Bait trapping using hay or other enticements may be used as an additional or alternative method of capture. This method would involve setting up a panel trap in an area accessible to the horses and feeding of enticements in the trap over a period of time to habituate the target animal to the bait. Once virtually all horses (or burros) in an area were coming in to the bait, they would be trapped. The principal limitation of this method is that forage must be limited or the bait must be more desirable than the surrounding forage.

c. Net Gunning

The net-gunning aerial capture technique uses weighted nets to individually capture wild animals.
Net gun capture is a valuable tool when specific animals are targeted for restraint, relocation or removal. The technique is not applicable when a large number of animals require capture.

When using nets, drug and electrical immobilization are rarely required. Individual animals are located, herded by the pilot as slowly as possible into an open area and then are netted from the helicopter using weighted, soft mesh net. As the horse or burro becomes tangled in the net they become somewhat disoriented and further slow down. Some animals come to a complete standstill when surrounded by the net. Others become tangled to the point where they roll onto the ground.

Immediately after netting an animal the crew members approach the animal. The horse or burro is rolled onto its side, cross-hobbled and blindfolded. A muzzle is used in cases where an animal acts aggressive. The net is then rolled away from the horse or burro and the animal can be handled for collection of biological samples. If transport is required, the hobbled, blindfolded animal is rolled into a soft canvas bag. The bag is laced closed with a strong nylon rope. The rope is attached to a hook on the belly of the helicopter and the animal is transported to the destination. Transport time to small, portable corrals is usually under 10 minutes per animal.

Once at the destination, the horse or burro is gently lowered into the small, portable corral. The ground crew unhooks the transport rope and removes the bag from around the animal. The blindfold and hobbles are removed. The horse or burro immediately gets onto their feet, appearing only slightly disoriented.

d. Chemical Capture

The chemical capture technique has similar benefits to the net gunning technique in the fact that individual animals may be captured. Chemical capture is a valuable tool when specific animals are targeted for restraint, relocation or removal. The technique is not applicable when a large number of animals require capture.

When using chemical capture a drug will be administer through the use of a dart gun and dart. The dart will be loaded with a chemical recommended by a veterinarian and approve by the BLM Authorized Officer on site. The dart is then shot out of a gun using the appropriate propellant for that gun. As the dart impacts the animal the chemical is released and the animal is subdued by the chemical. The use of this method is limited to within 100 yards or the range of the dart gun. The chemical can be administered from the ground or by air.

Once the animal is subdued by the chemical ground crews must imminently approach the animal and hobble or halter the animal. As the chemical wears off and the animal case once again move with normal function saddle horses may be used to move the animal where it can be loaded into a trailer. If the animal is already in a location where it can be loaded then the animal may be tied down for no longer then 1 hour and loaded directly into the trailer.

3. Stipulations for Portable Corral Traps/Exclosures

Capture traps would be constructed in a fashion to minimize the potential for injury to wild horses or burros and BLM/contractor personnel. Gates would be wired open at all unmanned trap sites, and would be left closed only when needed to hold horses or burros inside. Trapped horses or burros would not be held inside the traps for a period exceeding 10 hours, unless provided with feed (weed free hay) and water.

The Utah Division of Wildlife Resources would be notified as soon as possible if any wildlife became injured during capture operations. Wildlife caught inside traps would be released immediately.

4. Contract Helicopter, Pilot and Communications

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.

When refueling, the helicopter shall remain a distance of at least 1,000 feet or more from animals, vehicles (other than fuel truck), and personnel not involved in refueling.

The COTR/PI shall have the means to communicate with the contractor's pilot at all times. If communications cannot be established, the Government will take steps as necessary to protect the welfare of the animals. The necessary frequencies used for this contract will be assigned by the COTR/PI when the radio is used. The contractor shall obtain the necessary FCC licenses for the radio system.

The proper operation, service and maintenance of all contractor furnished helicopters is the responsibility of the contractor. The BLM reserves the right to remove from service pilots and helicopters which, in the opinion of the Contracting Officer or COTR/PI, violate contract and FAA rules, are unsafe or otherwise unsatisfactory. In this event, the contractor will be notified in writing to furnish replacement pilots or helicopters within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.

All incidents/accidents occurring during the performance of any delivery order shall be immediately reported to the COTR.

5. Non-Contract Helicopter Operations

An Aircraft Safety Plan and flight hazard analysis will be appropriately approved and filed and copies distributed to the necessary individuals prior to commencing the removal operation. Daily flight plans will also be filed. If a BLM contract helicopter is used, all BLM, Aircraft Safety and Operations standards will be adhered to.

There will be daily briefings with the helicopter pilot, Authorized Officer and all personnel involved in the day's operation. The purpose of this meeting is to discuss in detail all information gathered during the familiarization flight such as hazards, location of horses, potential problems, etc. Discuss any safety hazards anticipated for the coming day's operation or any safety problems observed by the Authorized Officer or anyone else, outline the plan of action, delineate course of actions, specifically position the hazers and their responsibilities, logistics, and timing. After each flight, removal personnel will discuss any problems and suggest solutions. This may be accomplished over the radio or on the ground as the need dictates.

A flight operations plan will be filed with the Cedar City Interagency Dispatch Center. This plan will describe the area to be flown and the expected time frames of flight operations. A weather forecast will be acquired from the dispatcher. There will be no flights on days of high or gusty, erratic winds or days with poor visibility.

Two-way radio communication between the helicopter and the ground crew will be maintained at all times during the operation.

An operation or contractor's log will be maintained for all phases of the operation. The log will be as detailed as possible and will include names, dates, places and other pertinent information, as well as, observations of personnel involved.

6. Animal Handling and Care

Prior to any gathering operations, the COTR/PI will provide for a pre-capture evaluation of existing conditions in the gather areas. The evaluation will include animal condition, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with 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 capture efforts necessitate

the services of a veterinarian, one would be obtained before capture would proceed.

The contractor will be apprised of the all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

The Authorize Officer and pilot may take a familiarization flight identifying all natural hazards (rims, canyons, winds) and man-made hazards in the area so that helicopter flight crew, ground personnel, and wild horse safety will be maximized. Aerial hazards will be recorded on the project map.

No fence modifications will be made without authorization from the Authorized Officer. The contractor/BLM shall be responsible for restoration of any fence modification which has been made.

If the route the contractor/BLM proposes to herd animals passes through a fence, opening should be large enough to allow free and safe passage. Fence material shall be rolled up and fence posts will be removed or sufficiently marked to ensure safety of the animals. The standing fence on each side of the gap will be well flagged or covered with jute or like material.

Wings shall not be constructed out of materials injurious to animals and must be approved by the Authorized Officer.

It is the responsibility of the contractor/BLM to provide security to prevent loss, injury or death of captured animals until delivery to final destination.

Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours. 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 COTR.

Branded or privately owned animals captured during gather operations will be handled in accordance with state estray laws and existing BLM policy.

Capture methods will be identified prior to issuance of delivery orders. Regardless of which methods are selected, all capture activities shall incorporate the following:

a. Trap Site Selection

The Authorized Officer will make a careful determination of a boundary line to serve as an outer limit within which horses will be herded to a selected trap site. The Authorized Officer will insure that the pilot is fully aware of all natural and manmade barriers which might restrict free movement of horses. Topography, distance, and current condition of the horses are factors that will be considered to set limits to minimize stress on horses.

Gather operations will be monitored and restricted (if necessary) to assure the body condition of the horses are compatible with the distances and the terrain over which they must travel. Pregnant mares, mares with small colts, and other horses would be allowed to drop out of bands which are being gathered if required to protect the safety and health of the animals.

All trap and holding facility locations must be approved by the Authorized Officer prior to construction. The situation may require moving of the trap. All traps and holding facilities not located on public land must have prior written approval of the landowner.

Trap sites will be located to cause as little injury and stress to the animals, and as little damage to the natural resources of the area, as possible. Sites will be located on or near existing roads. Additional trap sites may be required, as determined by the Authorized Officer, to relieve stress to the animals caused by specific conditions at the time of the gather (i.e. dust, rocky terrain, temperatures, etc.).

b. Trap/Facility Requirements

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:

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.

All loading chute sides shall be fully covered with plywood (without holes) or like material. The loading chute shall also be a minimum of 6 feet high.

All runways shall be of sufficient length and height to ensure animal and wrangler safety and may 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.

If a government furnished portable chute is used to restrain, age, or to provide additional care for animals, it shall be placed in the runway in a manner as instructed by or in concurrence with the Authorized Officer.

All crowding pens including the gates leading to the runways may, if necessary to prevent injuries from escape attempts, be covered with a material which prevents the animals from seeing out (plywood, burlap, snow fence etc.) and should be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses.

When holding facilities are used, and alternate pens are necessary to separate mares with small foals, animals which will be released, sick and injured animals, and estrays from the other animals or to facilitate sorting as to age, number, size, temperament, sex, and condition; they will be constructed to minimize injury due to fighting and trampling. In some cases, the Government will require that animals be restrained for determining an animal's age or for other purposes. In these instances, a portable restraining chute will be provided by the Government. Either segregation or temporary marking and later segregation will be at the discretion of the COTR.

If animals are held in the traps and/or holding facilities, a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day will be supplied. 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.

Separate water troughs shall be provided at each pen where animals are being held. Water troughs shall be constructed of such material (e.g. rubber, rubber over metal) so as to avoid injury to animals.

When dust conditions occur within or adjacent to the trap or holding facility, the contractor/BLM shall be required to wet down the ground with water.

7. Treatment of Injured or Sick; Disposition of Terminal Animals

The contractor/BLM shall restrain sick or injured animals if treatment is necessary. A veterinarian may be called to make a diagnosis and final determination. Destruction shall be done by the most humane method available. Authority for humane destruction of wild horses (or burros) 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 - Euthanasia is in accordance with BLM policy as expressed in Instructional Memorandum No. 2009-041.

Any captured horses that are found to have the following conditions may be humanely destroyed:

a. The animal shows a hopeless prognosis for life.
b. Suffers from a chronic or incurable disease.
c. Requires continuous care for acute pain and suffering.
d. Not capable of maintaining a Henneke body condition rating of one or two.
e. Has an acute or chronic injury, physical defect or lameness that would not allow the animal to live and interact with other horses, keep up with its peers or exhibits behaviors which may be considered essential for an acceptable quality of life constantly or for the foreseeable future.
f. Suffers from an acute or chronic infectious disease where State or Federal animal health officials order the humane destruction of the animal as a disease control measure.

The Authorized Officer will determine if injured animals must be destroyed and provide for destruction of such animals. The contractor/BLM 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 will be disposed of by burial to a depth of at least 3 feet.

The carcasses of the animals that must be destroyed as a result of age, injury, lameness, or non-contagious disease or illness will 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 will not be placed in a drainage regardless of drainage size or downstream destination.

8. Motorized Equipment

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 Authorized Officer with a current safety inspection (less than one year old) of all tractor/stock trailers used to transport animals to final destination.

Vehicles 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.

Only stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities. Only stock trailers, or single deck trucks shall be used to haul animals from temporary holding facilities to final destination(s). Sides or stock racks of transporting vehicles shall be a minimum height of 6 feet 6 inches from the vehicle floor. Single deck trucks with trailers 40 feet or longer shall have two (2) partition gates providing three (3) compartments within the trailer to separate animals. The compartments shall be of equal size plus or minus 10 percent. Trailers less than 40 feet shall have at least one partition gate providing two (2) compartments within the trailer to separate animals. The compartments shall be of equal size plus or minus 10

percent. Each partition shall be a minimum of 6 feet high and shall have at the minimum a 5 foot wide swinging gate. The use of double deck trailers is unacceptable and will not be allowed.

Vehicles used to transport animals to the final destination(s) shall be equipped with at least one (1) door at the rear end of the vehicle, which is capable of sliding either horizontally of vertically. The rear door must be capable of opening the full width of the trailer. All 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 the trailer must be strong enough, so that the animals cannot push their hooves through the sides. Final approval of vehicles to transport animals shall be held by the Authorized Officer.

Floors of vehicles, trailers, and the loading chute shall be covered and maintained with materials sufficient to prevent the animals from slipping.

Animals to be loaded and transported in any vehicle or trailer shall be as directed by the Authorized Officer and may include limitations on numbers according to age, size, sex, temperament, and animal condition. The minimum square footage per animal is as follows:

11 square feet/adult horse (1.4 linear foot in an 8 foot wide trailer)
06 square feet/horse foal (0.75 linear foot in an 8 foot trailer)

The Authorized Officer shall consider the condition of the animals, weather conditions, type of vehicles, distance to be transported, or other factors when planning for the movement of captured animals. The Authorized Officer shall provide for any brand and/or inspection services required for the captured animals.

Communication lines will be established with personnel involved in off-loading the animals to receive feedback on how the animals arrive (condition/injury etc.). Should problems arise, gathering methods, shipping methods and/or separation of the animals will be changed in an attempt to alleviate the problems.

If the Authorized Officer determines that dust conditions are such that animals could be endangered during transportation, the contractor/BLM will be instructed to adjust speed and/or use alternate routes.

Periodic checks by the Authorized Officer will be made as animals are transported along dirt roads. If speed restrictions are in effect the Authorized Officer will at times follow and/or time trips to ensure compliance.

9. Special Stipulations.

Private landowners or the proper administering agency(s) would be contacted and authorization obtained prior to setting up traps on any lands which are not administered by BLM. Wherever possible, traps would be constructed in such a manner as to not block vehicular access on existing roads.

If possible, traps would be constructed so that no riparian vegetation is contained within them. Impacts to riparian vegetation and/or running water is located within a trap (and available to horses) would be mitigated by removing horses from the trap immediately upon capture. No vehicles would be operated on riparian vegetation or on saturated soils associated with riparian/wetland areas.

Whenever possible, gathering would be conducted when soils are dry or frozen and conditions are optimal for safety and protection of the horses and wranglers. Also, whenever possible, scheduling of gathers would be done

to minimize impacts with big game hunting seasons.

Gathers would not be conducted 6 weeks on either side of peak foaling season, which for this gather is April 15th, to reduce the chance of injury or stress to pregnant mares or mares with young foals.

The helicopter would avoid eagles and other raptors, and would not be flown repeatedly over any identified active raptor nests. No unnecessary flying would occur over big game on their winter ranges or active fawning/calving grounds during the period of use.

Standard operating procedures in the setting-up and construction of traps will avoid adverse impacts to wildlife species, including threatened, endangered, or sensitive species.

Weed free hay will be used for bait trapping, and feeding purposes of wild horses and/or domestic horses at trap sites. Hay feed at Temporary Holding Facilities placed on federal lands will be certified weed free hay or approved by the authorized officer on site.

10. Herd Health and Viability Data Collection

The following information will be collected from each animal captured: age, sex, color, overall health, pregnancy or nursing status.

In addition, blood or hair samples may be collected from individuals within the herd. Certain other activities including immunocontraceptive research, radio collaring, respiratory disease, and freeze marking may be conducted.

a. Population Management Plan/Selective Addition or Removal

Blood samples may be taken for the purposes of furthering genetic ancestry studies and incorporation into the Population Management Plans which will be developed for each HMA/complex.

On occasion, it may be necessary to enhance and maintain genetic diversity a few animals with compatible characteristics may be introduced from other HMAs. Introduced animals will be taken from areas with similar habitat.

b. Immunocontraceptive Research

When the immunocontraceptive vaccine is used, delivery of the vaccine will be conducted by trained individuals, using approved delivery methods. The vaccine will be administered to the large muscle on the hip and/or as the approved delivery methods directs.

c. Respiratory Disease Research

Serum and nasal samples may be taken from all saddle horses and Judas horses within 48 hours before or after the first day of each gather. Swabs would be used to collect samples of nasal discharge or of the material drainage from the abscess from clinically ill wild horses during routine restraint. Data gathered from this research would be used in future management of wild horse during gathering and holding.

11. Public Participation

Prior to conducting a gather a communications plan or similar document summarizing the procedures to follow when media or interested public request information or viewing opportunities during the gather should be prepared.

The public must adhere to guidance from the agency representative and viewing must be prearranged.

12. Safety

Safety of BLM employees, contractors, members of the public, and the wild horses will be given primary consideration. The following safety measures will be used by the Authorized Officer and all others involved in the operation as the basis for evaluating safety performance and for safety discussions during the daily briefings:

A briefing between all parties involved in the gather will be conducted each morning.

All BLM personnel, contractors and volunteers will wear protective clothing suitable for work of this nature. BLM will alert observers of the requirement to dress properly (see Wild Horse and Burro Operational Hazards, BLM File 4720, UT-067). BLM will assure that members of the public are in safe observation areas.

The handling of hazardous, or potentially hazardous materials such as liquid nitrogen and vaccination needles will be accomplished in a safe and conscientious manner by BLM personnel or the contract veterinarian.

13. Responsibility and Lines of Communication

The local WH&B Specialist / Project Manager from the Cedar City Field Office, have the direct responsibility to ensure the contractor's compliance with the contract stipulations.

Gather Research Coordinator (GRC) from the Cedar City Field Office, will have the direct responsibility to ensure compliance with all data collection and sampling. The GRC will also ensure appropriate communication with Field Office Manager, WO260 National Research Coordinator, College of Veterinary Medicine at Texas A&M University, and Animal Plant Health Inspection Service (APHIS).

The Cedar City Field Office Assistant Manager will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, State Office, Salt Lake Regional Wild Horse Corrals and Delta Wild Horse Corrals.

All employees involved in the gathering operations will keep the best interests of the animals at the forefront at all times.

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.

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, deals with claims, disputes, negotiations, modifications, payments and appoints COTRs and PIs.

Contacting Officers Technical Representative (COTR) - 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.

Gather Research Coordinator (GRC)- A BLM employee that is designated by the Field Office Manager prior to each gather, who identifies potential problem areas in research data collection, determines need for additional field assistance to meet sampling requirements, ensures compliance with all data sampling, and communicants and coordinates all data gather during a gather with the Field Office Manager, WO260 National Research Coordinator, Colorado State University Center of Veterinary Epidemiology and Animal Disease and Surveillance Systems (CSU-CVEADSS), and Animal Plant Health Inspection Service (APHIS).

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 COTR 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 6.

Standard Operating Procedures for Population-level Fertility Control Treatments

One-year liquid vaccine: The following implementation and monitoring requirements are part of the Proposed Action:

1. PZP vaccine would be administered through darting by trained BLM personnel or collaborating research partners only. For any darting operation, the designated personnel must have successfully completed a Nationally recognized wildlife darting course and who have documented and successful experience darting wildlife under field conditions.
2. Mares that have never been treated would receive 0.5 cc of PZP vaccine emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA) and loaded into darts at the time a decision has been made to dart a specific mare. Mares identified for re-treatment receive 0.5 cc of the PZP vaccine emulsified with 0.5 cc of Freund's Incomplete Adjuvant (FIA).
3. The liquid dose of PZP vaccine is administered using 1.0 cc Pneu-Darts with 1.5" barbless needles fired from either Dan Inject® or Pneu-Dart® capture gun.
4. Only designated darters would mix the vaccine/adjuvant and prepare the emulsion. Vaccine-adjuvant emulsion would be loaded into darts at the darting site and delivered by means of a capture gun.
5. Delivery of the vaccine would be by intramuscular injection into the left or right hip/gluteal muscles while the mare is standing still.
6. Safety for both humans and the horse is the foremost consideration in deciding to dart a mare. The Dan Inject® gun would not be used at ranges in excess of 30 m while the Pneu-Dart® capture gun would not be used over 50 m, and no attempt would be taken when other persons are within a 30-m radius of the target animal.
7. No attempts would be taken in high wind or when the horse is standing at an angle where the dart could miss the hip/gluteal region and hit the rib cage. The ideal is when the dart would strike the skin of the horse at a perfect 90° angle.
8. If a loaded dart is not used within two hours of the time of loading, the contents would be transferred to a new dart before attempting another horse. If the dart is not used before the end of the day, it would be stored under refrigeration and the contents transferred to another dart the next day. Refrigerated darts would not be used in the field.
9. No more than two people should be present at the time of a darting. The second person is responsible for locating fired darts. The second person should also be responsible for identifying the horse and keeping onlookers at a safe distance.
10. To the extent possible, all darting would be carried out in a discrete manner. However, if darting is to be done within view of non-participants or members of the public, an explanation of the nature of the project would be carried out either immediately before or after the darting.
11. Attempts will be made to recover all darts. To the extent possible, all darts which are discharged and drop from the horse at the darting site would be recovered before another darting occurs. In exceptional situations, the site of a lost dart may be noted and marked, and recovery efforts made at a later time. All discharged darts would be examined after recovery in order to determine if the charge fired and the plunger fully expelled the vaccine.
12. All mares targeted for treatment will be clearly identifiable through photographs to enable researchers and HMA managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

13. Personnel conducting darting operations should be equipped with a two-way radio or cell phone to provide a communications link with the Project Veterinarian for advice and/or assistance. In the event of a veterinary emergency, darting personnel would immediately contact the Project Veterinarian, providing all available information concerning the nature and location of the incident.
14. In the event that a dart strikes a bone or imbeds in soft tissue and does not dislodge, the darter would follow the affected horse until the dart falls out or the horse can no longer be found. The darter would be responsible for daily observation of the horse until the situation is resolved.

22-month time-release pelleted vaccine: The following implementation and monitoring requirements are part of the Proposed Action:
1. PZP vaccine would be administered only by trained BLM personnel or collaborating research partners.
2. 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 delivered using a modified syringe and jabstick to inject the pellets into the gluteal muscles of the mares being returned to the range. The pellets are designed to release PZP over time similar to a time-release cold capsule.
3. Delivery of the vaccine would be by intramuscular injection into the gluteal muscles while the mare is restrained in a working chute. The primer would consist of 0.5 cc of liquid PZP emulsified with 0.5 cc of Freunds Modified Adjuvant (FMA). The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid or pellets would be injected into the left hind quarters of the mare, above the imaginary line that connects the point of the hip (hook bone) and the point of the buttocks (pin bone).
4. In the future, the vaccine may be administered remotely using an approved long range darting protocol and delivery system if or when that technology is developed.
5. All treated mares will be freeze-marked on the hip or neck HMA managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

Monitoring and Tracking of Treatments:
1. At a minimum, estimation of population growth rates using helicopter or fixed-wing surveys will be conducted before 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 adults).
2. 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 adults). If, during routine HMA field monitoring (on-the-ground), data describing mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.
3. A PZP Application Data sheet will be used by field applicators to record all pertinent data relating to identification of the mare (including photographs if 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.
4. 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, field office, and State along with the freeze-mark(s) applied by HMA and date.

Appendix 7
Population Model
Sulphur 2011 Population Modeling

To complete the population modeling for the Sulphur Herd Management Area, 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 use full 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

All simulations used the survival probabilities, foaling rates, and sex ratio at birth that was supplied with the WinnEquus population for the Garfield HMA. Initial age distribution was estimated based on previous gather data from the Sulphur HMA from 1996 to 2006.

Sex ratio at Birth:
42% Females
58% Males

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

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

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

Contraception Criteria
(Proposed Alternative)

Age	Percentages for Fertiltiy Treatment
1	0%
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 that are common to the Proposed Action and all alternatives:

- Starting year: 2010
- Intial Gather Year: 2010
- Gather interval: regular interval of three years
- Gather for fertility treatment regardless of population size: Yes
- Continue to gather after reduction to treat females: N/A
- Sex ratio at birth: 58% males
- Percent of the population that can be gathered: 85%
- Minimum age for long term holding facility horses: Not Applicable
- Foals are included in the AML
- Simulations were run for 10 years with 100 trials each

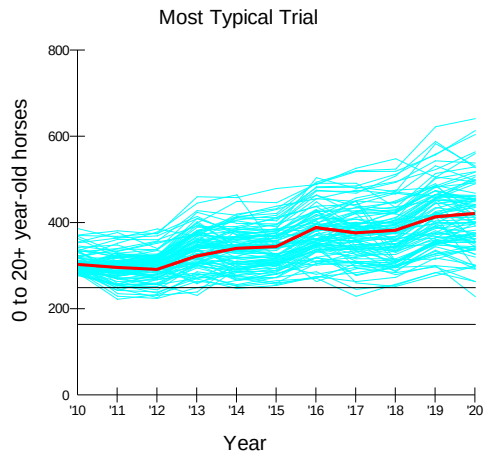
The following table displays the population modeling parameters utilized in the model:

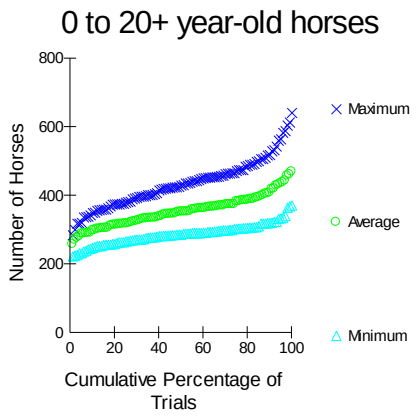
Population Modeling Parameters Modeling Parameter	Alternative A Proposed Action (Remove to High point of AML, Adjust sex ratio 60-40 & Fertility Control)	Alternative C No Action (No Removal & No Fertility Control)	
Management by removal, 60:40 adjustment in sex ratio, and fertility control	Yes	N/A	
Management by removal only	No	N/A	
Threshold Population Size Following Gathers	250	N/A	
Target Population Size Following gather	240	N/A	
Gather for fertility control regardless of population size	Yes	N/A	
Gather continue after removals to treat additional females	N/A	N/A	

Effectiveness of Fertility Control: Year 1	94%	N/A	N/A
Effectiveness of Fertility Control: Year 2	82%	N/A	N/A
Effectiveness of Fertility Control: Year 3	68%	N/A	N/A

Results- Alternative A: Proposed Action – Gather, Apply Two-Year Fertility Control and Release

Population Size



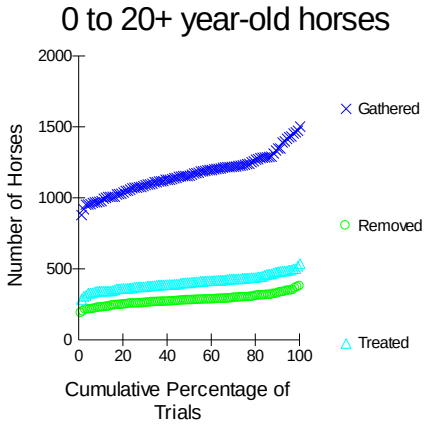


Population Sizes in 11 Years*

	Minimum	Average	Maximum
Lowest Trial	223	258	285
10th Percentile	249	298	350
25th Percentile	267	318	381
Median Trial	288	352	430
75th Percentile	304	382	474
90th Percentile	320	413	524
Highest Trial	372	469	642

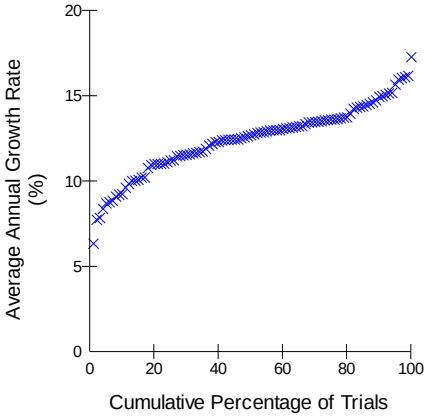
* 0 to 20+ year-old horses

In 11 years and 100 trials, the lowest number 0 to 20+ year-old horses ever obtained was 223 and the highest was 642. In half the trials, the minimum population size in 11 years was less than 288 and the maximum was less than 430. The average population size across 11 years ranged from 258 to 469.



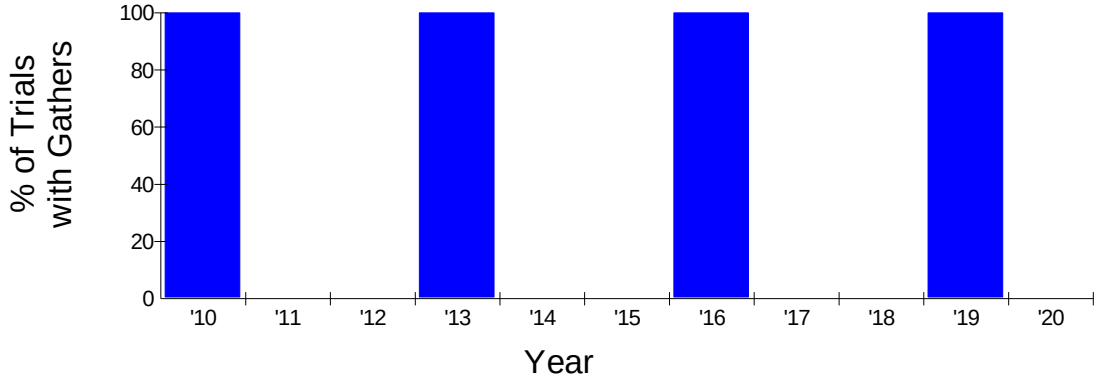
Totals in 11 Years*

	Gathered	Removed	Treated
Lowest Trial	883	190	289
10th Percentile	990	228	346
25th Percentile	1076	256	376
Median Trial	1164	279	408
75th Percentile	1240	300	438
90th Percentile	1352	330	485
Highest Trial	1507	379	541



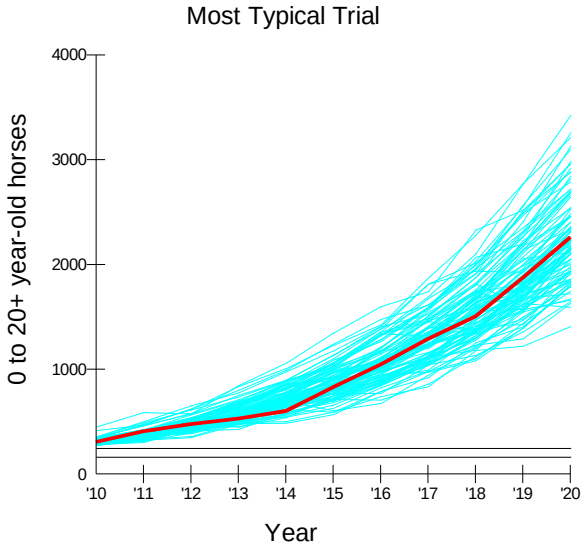
Average Growth Rate in 10 Years

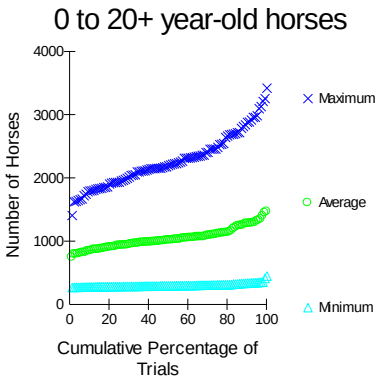
Lowest Trial	6.4
10th Percentile	9.5
25th Percentile	11.2
Median Trial	12.7
75th Percentile	13.6
90th Percentile	15.0
Highest Trial	17.3



Results - No Action

Population Size



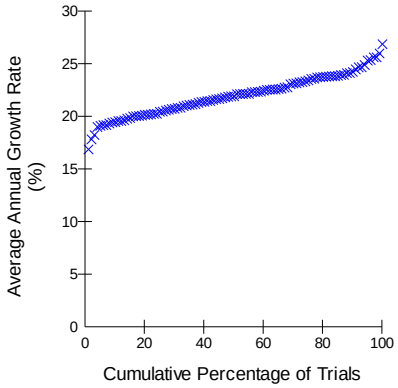


Population Sizes in 11 Years*

	Minimum	Average	Maximum
Lowest Trial	276	750	1413
10th Percentile	282	855	1804
25th Percentile	290	938	1950
Median Trial	301	1021	2210
75th Percentile	316	1122	2514
90th Percentile	344	1283	2890
Highest Trial	455	1471	3428

* 0 to 20+ year-old horses

In 11 years and 100 trials, the lowest number 0 to 20+ year-old horses ever obtained was 276 and the highest was 3428. In half the trials, the minimum population size in 11 years was less than 301 and the maximum was less than 2210. The average population size across 11 years ranged from 750 to 1471.



Average Growth Rate in 10 Years

Lowest Trial	16.9
10th Percentile	19.6
25th Percentile	20.5
Median Trial	22.1
75th Percentile	23.5
90th Percentile	24.4
Highest Trial	26.9

DRAFT