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Project Title: Sulphur Wild Horse Gather Plan

Location: Iron, Beaver, and Millard Counties, Utah



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PRELIMINARY

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1.0 PURPOSE AND NEED

1.1 Introduction

This EA is being prepared to analyze the potential impacts that could result with the implementation of the Proposed Action or alternatives to the Proposed Action. This EA assists the BLM in project planning, ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). A Decision Record (DR), with a FONSI, are documents that briefly present the reasons why implementation of the Proposed Action will not result in "significant" environmental impacts (effects) beyond those already addressed in the Pinyon Management Framework Plan (MFP) (1983), Warm Springs RMP/Final EIS dated 1987 and the Sulphur Wild Horse Herd Management Area Plan (HMAP, 1987). If the decision maker determines that this project has "significant" impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) may be signed for the EA approving the alternative selected.

1.2 Background

With passage of the Wild and Free Roaming Horse and Burro Act of 1971 (WFRHBA), Congress stated that, "Wild horses are living symbols of the pioneer spirit of the West." In addition, the Secretary was ordered to, "...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." From the passage of the Act, through present day, the Bureau of Land Management (BLM) Cedar City Field Office (CCFO) has endeavored to meet the requirements of this portion of the Act. The procedures and policies implemented to accomplish this mandate have been constantly evolving over the years.

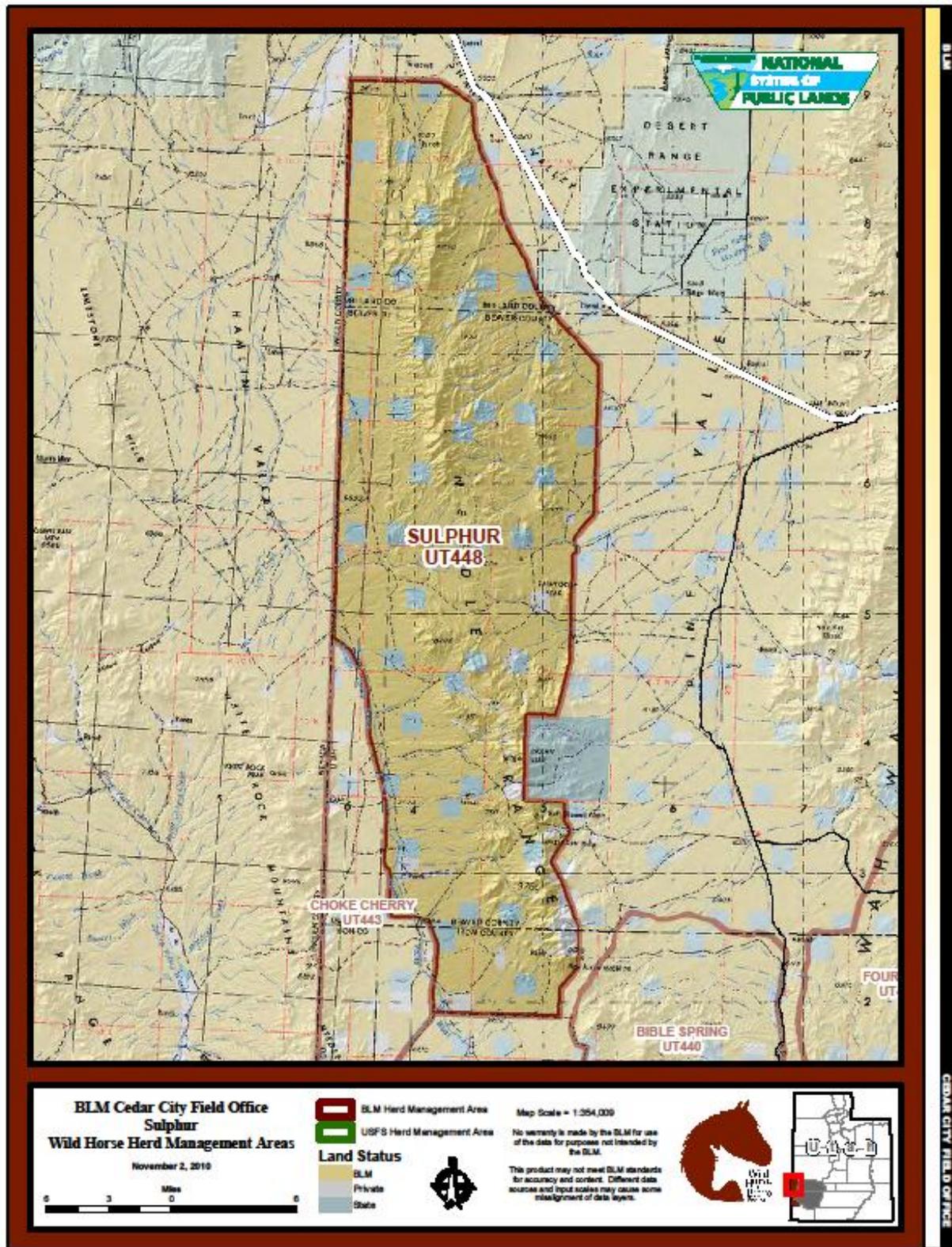
Since the passage of the WFRHBA, management knowledge regarding horse population levels has increased. For example, wild horses are capable of increasing numbers 15-20% annually (NAS 2013), resulting in the doubling of wild horse populations about every 3 years.

1.3 Purpose and Need for the Proposed Action

The purpose of the proposed Sulphur Wild Horse Gather Plan is to achieve a thriving natural ecological balance, achieve and maintain wild horse appropriate management levels (AML), collect information on herd characteristics, determine herd health, maintain sustainable rangelands, provide for public health and safety along Highway 21 and maintain a healthy wild horse population within the Sulphur Herd Management Area (HMA). See Map 1, below.

The proposed wild horse gather is needed to remove excess wild horses in order to achieve a thriving natural ecological balance between wild horse populations, livestock, wildlife (elk), rangeland vegetation and riparian resources, and protect the range from further degradation by wild horses. The fence along Highway 21 from the middle of North Pine Valley to Mormon Gap is needed for public health and safety to reduce the number of wild horse and vehicle collisions that occur in that area. The proposed action is needed to be in compliance with Section 3(b)(2) of

Map 1.1 Sulphur HMA



the Wild Free-Roaming Horses and Burros Act (PL 92-195) as amended, which states that “Where the Secretary determines . . . that an overpopulation exists on a given area of the public lands and that action is necessary to remove excess animals, he shall immediately remove excess animals from the range so as to achieve appropriate management levels.” The requirement for the authorized officer to remove excess animals immediately is also included in 43 CFR (Code of Federal Regulations) 4720.1.

1.4 Conformance with BLM Land Use Plans

The Proposed Action and alternatives are subject to two land use plans: the Pinyon Management Framework Plan (MFP) approved in 1983 and the Warm Springs Resource Area RMP approved in 1987. The Proposed Action is in conformance with MFP Decision RM 1.8 and WH1.1 which states, “. . . remove horses as required to maintain horse numbers at or below 1982 inventory levels. . . .” 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 RMP 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.” If wild horses of all ages are included in the AML number, the AML is 165 head to 250 head.

The Sulphur HMA overlaps with the Hamlin Valley greater sage-grouse Priority Habitat Management Area (PHMA) and, as such, is subject to the Greater Sage Grouse Environmental Impact Statement Record of Decision (ROD) and Approved Resource Management Plan Amendments (ARMPA) for Utah, approved in September 2015. The action alternatives are supported by MA-WHB-1, which states, “Manage HMAs in GRSG habitat within established appropriate management level ranges to achieve and maintain GRSG habitat objectives” and MA-WHB-3, which states, “Prioritize gathers and population growth suppression techniques in HMAs in GRSG habitat, unless removals are necessary in other areas to address higher priority environmental issues, including herd health impacts.”

1.5 Relationship to Statutes, Regulation or other Plans

The BLM prepared the Sulphur Wild Horse Gather and Removal EA-UT-040-08-19 and the Sulphur Wild Horse Herd Management Area Capture, Treat, and Release Plan DOI-BLM-UT-C010-2010-0048-EA to analyze the potential impacts associated with those previous gathers which were conducted in November of 2008 and December of 2010; these analysis are incorporated by reference. In November of 2008, 362 head of wild horses were gathered, 333 removed, and 29 (12 mares, 17 studs) released back to the range. Of these, 10 mares were treated with population growth suppression (Porcine Zona Pellucida, PZP-22) vaccine and freeze-marked for future identification. In December of 2010, 90 head of wild horses were gathered, 30 (mostly foals) removed, and 60 (38 mares, 22 studs) released back to the range. All 38 mares were treated with population growth suppression (Porcine Zona Pellucida, PZP-22) vaccine and freeze-marked for future identification.

Two Determination of NEPA Adequacy (DNA) reviews have been completed based on these EAs to allow for gather and removal of wild horses along Highway 21 for public health and safety

purposes. The Sulphur HMA Public Health and Safety Highway 21 Nuisance Gather (DOI-BLM-UT-C010-2014-0036-DNA) was completed in June 2014 and the Sulphur HMA Public Health and Safety Highway 21 Nuisance Gather (DOI-BLM-UT-C010-2015-0013-DNA) was completed in January 2015. In August of 2014, 30 head of wild horses were gathered and removed from the area along Highway 21. In February of 2015, 103 head of horses were gathered and removed from along Highway 21. Two of these horses were determined to be domestic and were turned over to the Utah Brand Inspector, leaving 101 head of wild horse removed from the area.

The action alternatives would comply with the following laws and/or agency regulations and are consistent with federal, state and local laws, regulations, and plans to the maximum extent possible.

- Public Law 92-195 (Wild Free-Roaming Horse and Burro Act of 1971) as amended by Public Law 94-579 (Federal Land Policy and Management Act of 1976), and Public Law 95-514 (Public Rangelands Improvement Act of 1978)
- 43 Code of Federal Regulations (CFR) 4700 and policies
- Section 106 of the Historic Preservation Act
- BLM Utah Riparian Management Policy (Instruction Memorandum UT-93-93, March 1993)
- Taylor Grazing Act (TGA) of 1934
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.)
- Public Rangelands Improvement Act (PRIA) of 1978
- Endangered Species Act (ESA) of 1973 as amended
- Title 43 CFR 4700 Protection, Management, and Control of Wild Free-Roaming Horses and Burros
- Standards and Guidelines for Healthy Rangelands, 1997 (BLM-UT-GI-98-007-1020)
- Fundamentals of Rangeland Health (43 CFR 4180)
- Greater Sage Grouse Environmental Impact Statement Record of Decision (ROD) and Approved Resource Management Plan Amendments (ARMPA) for Utah, approved in September 2015

1.6 Public Involvement

Public involvement was initiated by posting the proposal on the Utah BLM Environmental Notification Bulletin Board on April 8, 2014 and the BLM eplanning site in August of 2015. Both Iron and Beaver county commissioners have been in contact with the BLM requesting the removal of excess wild horses from private and public lands to within AML. The counties have requested that population growth suppression treatments be used on wild horses to reduce future population growth of wild horses. County resolutions have been passed to manage wild horse population with the counties at AML, as directed by the WFRHBA.

A public comment period for this EA (DOI-BLM-UT-C010-2015-0011-EA) will be held between December 21, 2015 and January 19, 2016. The EA will be available to the public at the Cedar City Field Office and on-line at http://www.blm.gov/ut/st/en/prog/wild_horse_and_burro.html or at <https://goo.gl/fo638L>. As required by regulation [43 CFR 4740.1(b)], a public hearing was held in Price, Utah on December 8, 2015 and will be held in subsequent years to discuss the use of helicopters and motorized vehicles in the management of Utah BLM's wild horses and burros.

This meeting will be advertised in papers and radio stations statewide. Similar meetings have been held each year in Utah since the passage of Federal Land Policy and Management Act of 1976. Comments received during the public comment period and the public meetings will be considered and, if applicable, will be addressed in management actions, NEPA documents, and decision documents using the most current direction from the National Wild Horse and Burro Program.

1.7 Identification of Issues

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

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 is also contained as part of Appendix 1. Those resources which may be affected by the alternatives are carried forward throughout this analysis, and are discussed briefly as follows.

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.

Livestock Grazing: Wild horses, wildlife, and livestock compete directly for the same cover, water, and forage resources.

Soils: Wild horse numbers above AML can reduce vegetation, compact soils, and increase wind and water erosion.

Wetlands/Riparian Zones: Overgrazing of riparian areas can occur when horse numbers are high and moisture conditions are low within the HMA.

Wildlife: Wild horses compete with wildlife for forage, particularly big game and can destroy nests and burrows used by wildlife species. Part of the Sulphur HMA lies in the greater sage-grouse Hamlin Valley PHMA.

Wild Horses and Burros: Excess wild horses above the AML have reduced available forage, resulting in increased competition for available resources. Wild horses have expanded outside of the HMAs in search of forage, water, space and cover.

1.8 Summary

This chapter has presented the Purpose and Need of the Proposed Action, as well as the relevant issues (i.e., those elements that could be affected by the implementation of the Proposed Action). In order to meet the purpose and need in a way that resolves the issues, the BLM has developed a range of alternatives. These alternatives, including the No Action Alternative, are presented in Chapter 2. The potential environmental impacts or consequences resulting from the implementation of each alternative are then analyzed in Chapter 4 for each of the identified issues.

2.0 DESCRIPTION OF ALTERNATIVES

2.1 Introduction

Based on identified issues, three alternatives are considered in detail:

- Alternative 1: Proposed Action –Gather and Remove Excess Wild Horses within the Sulphur HMA and Implement Population Growth Suppression
- Alternative 2: Gather and Remove Excess Wild Horses without Population Growth Suppression
- Alternative 3: No Action –No Gather, Removal or use of Population Growth Suppression

Alternatives considered but not analyzed in detail are discussed in Section 2.3:

- Wild Horse Management Implementing Population Growth Suppression without Removals to Achieve AML
- Remove or Reduce Livestock within the HMA
- Gather Wild Horses to the AML Upper Limit
- Population Growth Suppression Treatment Only Including Using Bait/Water Trapping To Dart Mares with PZP Remotely (No Removal)
- Bait or Water Trap Only
- Control Wild Horse Numbers by Natural Means
- Gather and Release Excess Wild Horses Every Two Years and Apply Two-Year PZP to Horses for Release
- Use Alternative Capture Techniques Instead of Helicopters to Capture Excess Wild Horses

2.2 Description of Alternatives Considered in Detail

Alternative 1 – Proposed Action – Gather and Remove Excess Wild Horses from the Sulphur HMA and Implement Population Growth Suppression

Under the Proposed Action, the BLM would conduct gathers approximately 2 to 4 times over a 6 to 10 year period to remove excess wild horses until the Sulphur HMA wild horse population is at the lower AML (see Table 1.1). If the lower AML was reached before the end of the 10 year period, additional gathers would be conducted to maintain the wild horse population in the Sulphur HMA to within the AML. Population growth suppression would be used in the Sulphur HMA to reduce the annual population growth. The primary use of population growth suppression would be to maintain the population within AML once achieved. It could be used prior to achieving AML if gather success, holding capacity limitations, population growth rates, other national gather priorities or other circumstances prevent achieving AML during a gather.

Table 1.1 Estimated 2015 Population, Capture and Removal Numbers

HMA	AML	2015 Estimated Population (3/1/2015)*	Winter 2015/2016 Gather Numbers to Lower AML**	Winter 2015/2016 Removal Number to Lower AML**	Winter 2015/2016 Gather Numbers to Upper AML**	Winter 2015/2016 Removal Numbers to Upper AML**
Sulphur	165-250	729	710	710	625	625

**The estimated population is based on an aerial population inventory completed in March of 2013. A mark-resight method was used. A total of 593 horses in 129 bands were identified by photos that were taken during the inventory. Photos of each band of horses was taken during each transect along with additional data. Horses were identified as individuals or as a band by their color, leg markings, face markings, and finally area/time recorded. The HMA was flown 9 times with transects that were approximately 1 mile apart. The flight path that was followed for each transect was uploaded into Ag-nav, which also recorded the actual flight path. A population increase of 20% was added for the foaling crop of 2013 and 2014 minus the 131 head of horses removed from the area along Highway 21. Based on the National Academy of Science (NAS) report released in 2013 the estimated population could be 20%-30% lower than the actual population.*

***Removal numbers were based on the estimated population as of March 1, 2015 plus the population increase of the foal crop in the spring of 2015 (estimated at 20% increase) minus the lower and upper AML.*

Each released mare would receive a single dose of the two-year PZP contraceptive vaccine or similar vaccine/population growth suppression treatment. When injected, PZP (antigen) causes the mare’s immune system to produce antibodies; 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 the environment, and can easily be administered in the field. In addition, among mares, PZP contraception appears to be completely reversible.

Other administrative actions (such as temporary livestock reductions, changes in grazing rotation, range improvements, fuels management, etc.) would be ongoing and addressed in other NEPA documents. The gather and removal operations, along with population growth suppression treatments, are planned to take place during more than one event in order to achieve the AML objective for the Sulphur HMA.

Table 1.1 shows the number of wild horses that would have to be gathered and removed to reach the lower and upper AML in the winter of 2015/2016. Based on past gather success in the Sulphur HMA area, only 60-70% of the population can be gathered in a single gather operation, thus requiring multiple gathers over more than a one year period in order to achieve AML. The gather, removal and fertility treatment numbers would vary each year over the 10 year period to accomplish the objective of achieving and maintaining the wild horse population to within AML. Other administrative factors (budget, adoptions, holding space, etc.) and gather success could also impact the numbers gathered, removed or treated during each operation over the 10 year period.

Regular population inventories would be conducted at a minimum of every 3 to 4 years to calculate the estimated population that would be used to determine the number of horses captured, removed and treated with population growth suppression each gather. A population inventory planned for the Sulphur HMA in Fiscal Year 2016 would be used to adjust the estimated population, capture, remove, and treated numbers after March 1, 2016. This process would be followed over the 10 year period to achieve and maintain the wild horse population within AML.

The capture and removal operations would be accomplished using design features listed below. The gather area would include the Sulphur HMA and lands where wild horses have strayed outside the HMA (up to 10 miles). In addition, this document would authorize the capture and removal operations of wild horses that stray to areas along Highway 21 and become a public health and safety issue.

The management emphasis would be to achieve and/or maintain the estimated wild horse AML, collect information on herd characteristics, conduct research, collect genetic samples, determine herd health, provide for public safety and establish a thriving ecological balance with the other resources within the HMA. The information gained from these actions would then be used in future management of wild horses within the CCFO.

Authorized wild horse capture techniques would be used to capture excess wild horses from the Sulphur HMA. These techniques include:

- Helicopter Drive Trapping
- Water and Bait Trapping
- Roping

One or a combination of capture techniques may be utilized. The selected technique(s) would depend on herd health and the season (fall, winter, or summer) in which the gather is scheduled in order to maximize gather success and minimize impacts to wild horses.

Design Features to Minimize Impacts

- Multiple capture sites (traps) may be used to capture wild horses from the HMA.
- Whenever possible, capture sites will be located in previously disturbed areas. Generally, these activity sites will be small (less than one half acre) in size.
- No new roads will be constructed.
- No trap sites will be located on areas where threatened, endangered, and special status species occur without clearance.
- All capture and handling activities will be conducted in accordance with the most current policies and procedures of the BLM.
- Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers will be followed.
- Helicopter gathers and water/bait trap gathers of a large size (more than 20 horses) will not be conducted between March 1 and June 30.
- During capture operations, safety precautions will be taken to protect all personnel, animals and property involved in the process from injury or damage.
- Only authorized personnel will be allowed on site during the removal operation.
- Private landowners or the proper administering agency(s) will be contacted and authorization obtained prior to setting up traps on any lands which are not administered by BLM.
- Wherever possible, traps will be constructed in such a manner as to not block vehicular access on existing roads.

- If possible, traps will be constructed so that no riparian vegetation is contained within them. Impacts to riparian vegetation and/or running water located within a trap (and available to horses) will be mitigated by removing horses from the trap immediately upon capture. No vehicles will be operated on riparian vegetation or on saturated soils associated with riparian/wetland areas.
- Scheduling of gathers will minimize impacts with big game hunting seasons.
- The helicopter will avoid eagles and other raptors, and will not be flown repeatedly over any identified active raptor nests.
- No unnecessary flying will occur over big game on their winter ranges or active fawning/calving grounds during the period of use.
- No hazardous material will be used, produced, transported or stored in conjunction with this proposed action. Small amounts of carefully managed chemicals may be used to treat sick or injured animals at the capture sites.
- Fences would be constructed as BLM “wildlife friendly.”
- Weed free hay will be used in trap sites and temporary holding facilities located on BLM-administered lands.

Global positioning system (GPS) and very high frequency (VHF) radio collars and tags can be used to provide high spatial and temporal resolution information for detecting free-roaming horse movement and for other research purposes.

Additional design features are described in Appendix 2. Standards from the Comprehensive Animal Welfare Program for wild horse and burro gathers are contained in Appendix 3. Standard Operating Procedures for population growth suppression treatment are contained in Appendix 4.

Highway 21 Fencing

A fence would be constructed along the Highway 21 right-of-way for approximately 17.5 miles (Map 2.1). The portion from the Desert Experimental Station to Mormon Gap (approximately 7.5 miles) would be constructed first. The remaining portion of the fence from the Desert Experimental Station to the South Pine Valley Allotment fence would be constructed as funding and priorities allow. The fence would be constructed in accordance with BLM specifications outlined in Appendix 5. This fence is needed for public health and safety to reduce the number of wild horse and vehicle collisions that occur in that area.

Alternative 2: Gather and Remove Excess Wild Horses without Population Growth Suppression.

This alternative would be the same as the proposed action; however, no population growth suppression treatments would be applied. If gather objectives are not met, additional gathers in following years would occur until the population reached the lower AML of 165 head within the Sulphur HMA. The population would then be controlled within AML (165-250 head) through gathers and removals.

Alternative 3 - No Action Alternative- No Gather, Removal or use of Population Growth Suppression

Under the No Action Alternative, no wild horse gathers, removals, or use of population growth suppression would be undertaken to control the size of the wild horse population at this time. Wild horse populations of the Sulphur HMA would not be actively managed at this time. The fence along Highway 21 to eliminate issues to public health and safety would not be constructed.

2.3 Alternatives Considered but Eliminated from Further Analysis

Wild Horse Management Implementing Population Growth Suppression without Removals to Achieve AML

This alternative would not allow for population regulation by removing wild horses to achieve AML on the Sulphur HMA. Wild horse management under this alternative would involve inoculating mares with PZP or other population growth suppression vaccines as outlined above. Gather, data collection, and handling techniques would be followed in accordance with the proposed action. Mares inoculated during the winter of 2015/2016 and other years the vaccine was administered would foal normally in the spring following treatment. Reproduction would be limited the following year or years after treatment.

In addition to not meeting the selection criteria for implementing population growth suppression research, this alternative was eliminated from further consideration due to the inability to achieve population objectives. The current population within the Sulphur HMA exceeds the AML as established in the Pinyon MFP, Warm Springs Resource Area RMP and the Sulphur Wild Horse Herd Management Area Plan. Implementing population growth suppression without removing wild horses would not address the immediate issue of achieving AML. Population modeling shows that using this alternative with the current immunocontraceptive available would not control the population of wild horses and would not be in conformance with the WFRHBA, Pinyon MFP, Warm Springs Resource Area RMP and the Sulphur Wild Horse Herd Management Area Plan. The WFRHBA mandates the BLM to prevent the range from deterioration associated with overpopulation and preserve and maintain a thriving natural ecological balance in consideration with multiple use relationships.

Remove or Reduce Livestock within the HMA

This alternative would involve no removal of wild horses and instead address the impacts from 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 inconsistent with multiple use management, as required by FLPMA, the Pinyon MFP, Warm Springs Resource Area RMP, Sulphur Wild Horse Herd Management Area Plan and the Wild Horse and Burro Act, which

directs the Secretary to immediately remove excess wild horses. 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 or where fuels reduction treatments have been completed. Reduction and/or removal of livestock alone would not achieve utilization and vegetative objectives, as excess wild horses would continue to impact these areas that have not received livestock use for 2 to 10 years.

Livestock grazing can only be reduced on permits following the process outlined in the regulations found at 43 CFR Part 4100. Several reductions and changes have been made to livestock grazing within allotments associated with the Sulphur HMA through this process. The elimination of livestock grazing in an area would require an amendment to the land use plans, which is out of the scope of this analysis. Such changes to livestock grazing cannot be made through a wild horse gather decision.

Livestock permit renewals were completed from 2007 to 2014 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, 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.

The BLM is currently authorized to remove livestock from the 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 the separate decisions establishing the appropriate levels of livestock grazing and wild horse use, respectively.

Gather Wild Horses to the AML Upper Limit

A post-gather population size at the upper level of the AML range would result in the AML being exceeded the next foaling season. This would be unacceptable for several reasons.

The AML represents “that ‘optimum number’ of wild horses which results in a thriving natural ecological balance and avoids a deterioration of the range” (Animal Protection Institute, 109 IBLA 119;1989). The Interior Board of Land Appeals (IBLA) has also held that, “Proper range management dictates removal of horses before the herd size causes damage to the rangeland. Thus, the optimum number of horses is somewhere below the number that would cause resource damage” (Animal Protection Institute, 118 IBLA 63, 75; 1991).

The upper level of the AML established within a HMA represents the maximum population at which a thriving natural ecological balance would be maintained. The lower level represents the number of animals to remain in a HMA following a wild horse gather, in order to allow for a periodic gather cycle, and to prevent the population from exceeding the established AML between gathers.

Additionally, gathering to the upper range of AML would result in the need to follow up with another gather within one year (with resulting stress on the wild horse population), and could result in overutilization of vegetation resources and damage to the rangeland if the BLM were unable to gather the excess horses in the HMA on an annual basis. This alternative would not reduce the wild horse population growth rate of 20 percent in the HMA and the BLM would not be able to conduct periodic gathers and still maintain a thriving natural ecological balance. For these reasons, this alternative did not receive further consideration in this document.

Population Growth Suppression Treatment Only Including Using Bait/Water Trapping To Dart Mares with PZP Remotely (No Removal)

Population modeling was completed to analyze the potential impacts associated with conducting gathers about every 3 years over the next 10 year period to treat captured mares with population growth suppression. Under this alternative, no excess wild horses would be removed. The use of bait or water trapping would still not remove excess wild horses. While the average population growth would be reduced, AML would not be achieved and the damage to the range associated with wild horse overpopulation would continue. This alternative would not meet the Purpose and Need for the Action, and would be contrary to the WFRHBA.

The use of remote darting to administer PZP within the HMA where the horses are not accustomed to human activity has been shown to be very difficult. In the Cedar Mountain HMA during a two year study where administration of PZP by remote darting was to occur, not a single horse was successfully darted. This method has been effective in some HMAs where the wild horses are more approachable but the Sulphur HMA is not such an area.

Bait or Water Trap Only

An alternative considered but eliminated from detailed analysis was use of bait and/or water trapping as the primary gathering method. The use of bait and water trapping, though effective in specific areas and circumstances, would not be timely, cost-effective or practical as the primary gather method for this HMA due to the size of the area and the remoteness of many of the water sources. However, water or bait trapping may be used to achieve the desired goals of alternatives 1 and 2 if gather efficiencies are too low using a helicopter, a helicopter gather cannot be scheduled, or to help maintain AML once achieved. This alternative was dismissed from detailed study as a primary gather method for the following reasons: (1) the project area is too large to effectively use this gather method; (2) road access for vehicles to potential trapping locations necessary to get equipment in/out as well as to safely transport gathered wild horses is limited; and (3) the presence of scattered water sources on both private, state and public lands inside and outside the HMA would make it almost impossible to restrict wild horse access to the extent necessary to effectively gather and remove the excess animals through bait and/or water trapping to achieve management goals.

Controlling Wild Horse Numbers 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, which directs the BLM to conduct gathers as necessary to achieve and maintain the 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-- caused catastrophic mortality of wild horses (See Appendix 6, Population Modeling).

Gather and Release Excess Wild Horses Every Two Years and Apply Two-Year PZP to Horses for Release.

Another alternative considered was to gather a substantial portion of the existing population (90%) and implement Population growth suppression treatment only, without removal of excess horses was modeled using a two-year gather/treatment interval over a 10 year period. The effectiveness of the 22 month PZP is somewhat in question based on the most recent pen trials. However, for the modeling a percent effectiveness of 94% the first year, 82% the second, and 68% the third year was used. Based on WinEquus population modeling (See Appendix 5), this alternative would not result in attainment of AML for the HMA. The wild horse population would continue to have an average population growth rate of 6.9% to 12.1% adding to the current wild horse overpopulation, albeit at a slower rate of growth than the No Action Alternative. The modeling reflected an average population size in 11 years of 1363 to 2516 wild horses under a two year treatment interval. In 90% of the trials, this alternative would not decrease the existing overpopulation of wild horses, resource concerns and rangeland deterioration would continue, and implementation would result in substantially increased gather and Population growth suppression costs relative to the alternatives that remove excess wild horses to the AML range. In addition to not achieving AML, the time needed to complete a gather would also increase over time, because the more frequently an area is gathered, the more difficult wild horses are to trap. They become very evasive and learn to evade the helicopter by taking cover in treed areas and canyons. Wild horses would also move out of the area when they hear a helicopter, thereby further reducing the overall gather efficiency. The horses would also become so wary of traps used in water or bait traps that they would avoid any waters where traps are or were set up. Frequent gathers would increase the stress to wild horses, as individuals and as entire herds. It would become increasingly more difficult over time to repeat gathers every two years to successfully treat a large portion of the population. For these reasons, this alternative was dropped from detailed study.

Use Alternative Capture Techniques Instead of Helicopters to Capture Excess Wild Horses

An alternative using capture methods other than helicopters and bait/water trapping was suggested by the public. As no specific alternative methods were suggested, the BLM identified chemical immobilization, net gunning, and wrangler/horseback drive trapping as potential methods for gathering horses. Net gunning techniques normally used to capture big game also rely on helicopters. Chemical immobilization is a very specialized technique and strictly regulated. Currently, the BLM does not have sufficient expertise to implement either of these methods and they would be impractical to use given the size of the Sulphur HMA, access limitations and approachability of the horses.

Use of wrangler on horseback drive-trapping to remove excess wild horses can be fairly effective on a small scale, but due to the number of excess horses to be removed, the large geographic size of the Sulphur HMA, access limitations and approachability of the horses this technique would

be ineffective and impractical. Horseback drive-trapping is also very labor intensive and can be very harmful to the domestic horses and the wranglers used to herd the wild horses. For these reasons, this alternative was eliminated from further consideration.

2.4 Summary

The alternatives being addressed in this document cover a reasonable range of alternatives for meeting the purpose and need. No other alternatives have been developed by the public or the Cedar City Field Office staff at this time.

PRELIMINARY

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area as identified in the Interdisciplinary Team Checklist (Appendix 1) and presented in Chapter 1 of this assessment. This chapter provides the baseline for comparison of impacts described in Chapter 4.

3.2 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 contains approximately 265,675 acres. The Sulphur HMA has elevations ranging from 9,790 feet on top of Indian Peak to 6,000 feet in the valley floors.

Average annual precipitation in the 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, 2009, 2014 and 2015 drought conditions and below normal precipitation occurred, with 2002 and 2003 being severe drought years (BLM precipitation data). Upland vegetation springs, and seeps continue to struggle to recover from so many years of below normal precipitation. During the 2010 water year the precipitation was near normal, with good precipitation in the spring.

Available water within the HMA 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, 2008, 2012, 2013, 2014 and 2015, forcing animals onto winter ranges and into areas outside of the HMA traditionally unoccupied by horses. This past summer 160,000 gallons of water was hauled to the north part of the HMA to sustain wild horses. Most water sources produced less than average levels for the summer, forcing wild horses to use winter ranges throughout the summer.

3.3 Description of Affected Resources/Issues

Rangeland Resources and Vegetation

Rangeland Health Assessments were completed on 5 grazing allotments within the gather area since 2007 as indicated by the Monitoring Report for the Sulphur HMA. Nested frequency, utilization, Rangeland Health Assessments, actual use, climate, etc. were utilized to determine whether the Standards and Guidelines for Healthy Rangelands were being achieved. All of the allotments or portions of allotments that occur within the Sulphur HMA failed to meet at least one of the standards. Causal factors for not meeting standards included, but were not limited to, Pinyon Pine/Juniper (PJ) encroachment, drought and grazing by livestock, wildlife and wild horses. If it was determined that livestock were a causal factor toward the non-attainment of the Standards and Guidelines, changes to livestock grazing were made through the grazing permit renewal process. These changes included livestock reductions, changes to season of use, identification of grazing management systems, changes in kind of livestock, and other livestock

management actions. Wildlife grazing or impacts that are identified as causal factors are addressed during annual coordination with Utah Division of Wildlife Resources and habitat improvement projects.

Vegetation production and vigor has been reduced by the past and present droughts. 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 1999-2004 and 2012-2014, average annual precipitation never exceeded 12 inches within the Sulphur HMA except at the high elevations of Mountain Home and Indian Peak. The average for the rest of the HMA was 75% or below of the normal precipitation for that 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, Mountain Shrub, Pinyon-Juniper (PJ), sagebrush, grasslands, and salt desert shrub (Table 3.1). The PJ woodland type dominates the HMA and is very dense with minimal understory forage. Open areas outside the PJ canopy are dominated by Wyoming big sagebrush with Indian ricegrass, wheatgrass, bluegrass, and squirreltail grass as the primary forage species.

Table 3.1 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 PJ woodlands, followed by aerial seeding, changed much of the PJ 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 HMA 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 in the absence of fire. Most of the seeded areas continue to produce forage for another 10 to 20 years, diminishing as the shrubs and trees continue to increase. When the drought began in 1998, most of the seedlings 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. From 1998 thru 2000 the wild horse population was estimated to be between 444 and 532 head. This was the highest estimated population in the Sulphur HMA since the passage of the Wild Horse and Burro Act of 1971, until 2013 when the estimated wild horse population jumped to 718 head using improved inventory methods. The high population of wild horses in the HMA between 1998 and 2000 resulted in 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. This is occurring again with the current high population of wild horses in the HMA.

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 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.

Livestock

Approximately 8,355 sheep Animal Unit Months (AUMs) and 17,076 cattle AUMs are permitted on 9 allotments that have some portion of the allotment within the HMAs (Table 3.2).

Livestock forage allocations based on existing livestock preference were included in the 1983 Pinyon MFP and Warm Springs Resource Area RMP (1987). In general, actual livestock use within the HMAs or in the allotments has been substantially reduced during the years of drought over the past fifteen years. As livestock grazing permits are evaluated, additional adjustments to the total livestock grazing may be made through the permit renewal process based on current vegetative and climatic monitoring information.

Table 3.2 identifies the current season of use and permitted use within each of the allotments associated with the Sulphur HMA.

Table 3.2 Allotment Associated with Sulphur HMA

FILLMORE ALLOTMENTS	CLASS OF LIVESTOCK	SEASON OF USE	ACTIVE AUMS	PERCENT OF ALLOTMENT WITHIN HMA
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%
CEDAR CITY ALLOTMENTS				
Atchison Creek (M)	Cattle	7/1-8/15	267	93%
Bennion Spring (I)	Cattle	4/1-11/30	2130	5%
Indian Peak (I)	Cattle	3/1-2/28	1476	92%
	Sheep	6/15-2/28	282	
Mountain Home (M)	None			100%
North Pine Valley (I)	Cattle	3/1-2/28	5172	8%
South Pine Valley (M)	Cattle	3/1-2/28	5806	2%

*Management Category (I-Improve, M-Maintain)

Soils

Soils within the proposed gather area are highly variable in terms of parent material, erosion potential, productivity and other aspects. Detailed soil descriptions and maps may be found in the Soil Survey of Iron – Washington Area, Utah (Natural Resource Conservation Service (NRCS), 1996) for that portion of the analysis area in Iron County. No similar data is available for the Beaver County portion of the analysis area.

BLM is required to keep an inventory of how well grazing allotments are meeting Utah BLM’s Rangeland Health (RLH) Standards, which includes rating soil conditions in terms of current conditions and causal factors for those conditions. The results of RLH assessments are the basis of soils analysis for this proposal. RLH Standard 1 requires productive upland soils as evidenced by sufficient cover and litter to protect soil surfaces from erosion, the absence of erosion indicators and appropriate kind and amounts of vegetation to allow properly functioning ecological conditions. The Key Forage method has been used as recently as spring 2014 to monitor how much vegetation has been removed (primarily by large ungulates), and may be used to reflect whether or not adequate protective vegetation cover and litter has been left on-site to protect soils surfaces from erosion.

Rangeland Health Assessments were completed on 5 grazing allotments within the gather area since 2007 as indicated by the Monitoring Report for the Sulphur HMA. Standard 1 for Upland Soils was being met on the Bennion Spring, Indian Peak, and South Pine Valley allotments. Two of the allotments (Atchison Creek and Stateline) did not meet Standard 1. Indicators used to reach the “not meeting” conclusion were excessive plant pedestals, percent bare ground, litter movement and soil loss. Many of the sites lacked resistance to soil erosion and lacked residual vegetation (and litter) following grazing by all herbivores. Flow patterns were identified both in

and outside of animal trails and hoof action from livestock, wild horses and wildlife was found to be contributing to the compaction and loss of soil in areas within one half mile of water sources, including riparian areas.

Wetland/Riparian Resources

There are approximately 16 miles of lotic riparian habitat and 20 acres of lentic riparian habitat associated with the Sulphur HMA. These riparian resources, consisting of streams, seeps and springs, are fairly abundant within the Sulphur HMA and are typically quite small. They occur on public, state, and private lands, and represent less than 1 percent of the total acreage of public lands in the Sulphur HMA. The majority of the riparian systems within the HMA were rated as Functioning at Risk (FAR), with very few sites rating Proper Functioning Condition (PFC).

The causal factors for ratings below PFC vary depending on the specific riparian system, though is typically attributed to a handful of concerns including water development, dewatering, road encroachment, upstream channel conditions, upland vegetation encroachment, recreation, excessive use/trampling by Livestock, wild horses, and wildlife. Damage to wetland and riparian areas often increases during drought years when wild horses may trample and dig in these areas in search of water. 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.

Wildlife

For more information, see the technical report for wildlife attached to Appendix 1. No threatened, endangered or candidate species would be affected by the proposed action or alternatives.

BLM Sensitive Species

These species are known to occur or to have a high probability of occurrence within the Great Basin Region based on habitat types within the proposed project area and Utah Natural Heritage Program Records of Occurrence.

Ferruginous Hawk (*Buteo regalis*)

The primary breeding habitat for this species is pinyon-juniper and secondary breeding habitat is shrub steppe. Edges of pinyon-juniper woodlands, utility structures (transmission poles), cliffs, and isolated trees serve to provide nesting as well as perching structures for ferruginous hawk.

Burrowing Owl (*Athene cunicularia*)

The primary breeding habitat for this species is high desert scrub; grasslands are used as secondary breeding habitat. Nesting may occur in sparsely vegetated sagebrush-steppe and desert scrub habitats. Abandon wildlife burrows associated with badger, ground squirrels, etc. are an important component of the habitat.

Pygmy Rabbit (*Brachylagus idahoensis*)

Pygmy rabbits are considered sagebrush obligate and are reliant upon big sagebrush species for cover and food. Primary breeding habitat is shrub steppe communities. Pygmy rabbits occur in the Sulphur HMA.

Greater Sage-Grouse (*Centrocercus urophasianus*)

The Sulphur Herd Management Area contains greater sage-grouse winter, brood-rearing, occupied and winter habitat. There are three occupied leks within or in close proximity to the Sulphur HMA. Typically proximity and abundance of nesting habitat are key factors for lek locations. Nesting habitat for sage-grouse includes sagebrush with an understory of native grasses and forbs, with horizontal and vertical structural diversity. This provides an insect prey base, herbaceous forage for pre-laying and nesting hens, and cover for the hen while she is incubating.

Brood rearing habitat is typically defined for early-brood rearing and late-brood rearing activities. Late spring/early summer grazing by wild horses generally impacts the habitat and the ability of the vegetative communities to provide adequate cover for brood-rearing sage-grouse. Competition between wild horses and sage-grouse occurs during the winter because sage-grouse feed exclusively on the leaves of sagebrush.

The proposed fence along Highway 21 is not within UDWR mapped greater sage-grouse occupied, brood, or winter habitat. Additionally, the fence is not within the greater sage-grouse PHMA. The proposed fence is greater than 1.2 miles from a lek, therefore; collisions between sage-grouse and construction of the new fence are not expected.

Big Game Species

Big game species that occur in the Sulphur HMA include mule deer, Rocky Mountain elk and pronghorn. All three species are year-long residents. Competition for forage between big game species and wild horses is greatest during the spring and summer months when mule deer, elk and pronghorn are feeding primarily on grasses and forbs. Additionally, forb consumption is crucial during the early spring months for does to maintain a healthy body condition while meeting the nutrient requirements of nursing fawns. Competition is reduced in fall and winter when mule deer and pronghorn shift their diets to browse (i.e. bitterbrush, sagebrush) species. Typically elk move to wintering areas throughout the Pine and Hamlin Valleys. During periods of drought competition between wildlife and wild horses increase dramatically when less forage is available.

Wild Horses

Range Conditions

Drought conditions and overpopulation of wild horses between 1999 and 2005 have reduced forage production in some of the key wild horse habitat areas. In 2007, 2008, 2013, 2014 and continuing in 2015, similar drought conditions and high populations of wild horses have occurred. Although a portion of the HMA does not have any livestock grazing and livestock numbers were reduced and/or completely removed from the allotments in the HMA during these years, excess wild horses have overgrazed many areas during critical growth periods. As of April 1, 2015 precipitation data indicate that the HMA has received only 30-50% of normal moisture. This

places the HMA in extreme drought going into the 2015 summer. Wild horse and elk utilization within key areas on the Mountain Home Allotment for 2015 was heavy. This, along with the reduced vigor of the plants because of the drought, is causing mortality of key forage species within in that allotment and has been observed in other areas within the HMA with high concentrations of wild horses.

Because horses have a cecal digestive system and can cover longer distances than can domestic ruminants, wild horses can remain in good health under forage conditions fatal to domestic ruminants (Holechek, 1989). In 1999 and 2000, range conditions within the HMA became so bad that even with almost no livestock use and several hundred head of wild horses removed, health of some horses declined to critical conditions. Some horses were lost to starvation and dehydration during those years. In 2015, eight wild horses are known to have died due to lack of forage and/or water.

The overriding limiting factor for the carrying capacity of the horses in the HMA is not the available forage, although this is a concern, but is the supply of reliable water during the summer months. In 2015, 160,000 gallons of water was hauled to three different site on the northern part of the HMA to sustain wild horse health. Upland vegetation in proximity to reliable water sources and these water haul sites is used heavily by wild horses, wildlife, and livestock, while vegetation in areas farther from water is used slightly. There are areas in the south part of the HMA that have adequate forage, but are not usable for most of the year due to lack of water and/or seasonal condition (i.e snow depth). During drought conditions, as has occurred during 1999-2004 and the last few years, several water sources dry up, concentrating wild horses on the remaining water sources and limiting the number of horses that a the HMA can support without hauling water. The increased concentration of wild horses at these sites reduces vegetation and causes soil compaction. The water hauling is not sustainable for long periods of time.

Appropriate Management Level

In June of 1983, the Pinyon MFP decisions established the population level (AML) 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 3.3 Sulphur HMA AML Establishment

ALLOTMENT	DECISION	AML
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 AML for the Pinyon MFP and Warm Springs RMP.

The current estimated population of 729 wild horses as of the March 2015 would continue to increase at a rate of 15-20% annually. The current estimated population of the Sulphur HMA was developed after completion of an aerial population inventory flight in March of 2013 using the mark-resight method (Appendix 7). A total of 593 horses in 129 bands were identified by photos that were taken during the inventory. Photos of each band of horses was taken during each transect along with additional data. Horses were identified as individuals or as a band by their color, leg markings, face markings, and finally area/time recorded. The HMA was flown 9 times with transects that were approximately 1 mile apart. The flight path that was followed for each transect was uploaded into Ag-nav, which also recorded the actual flight path. A population increase of 20% was added for the foaling crop of 2013, 2014 and 2015 minus the 131 head of horses removed from the area along Highway 21. Based on the National Academy of Science (NAS) report released in 2013 the estimated population could be 20%-30% lower than the actual population. That is 291% above the upper AML number.

The 1987 the Sulphur HMAP identified that 2,552 AUMs were available for wild horse use within the HMA. In 2000 and 2006 the estimated population of the Sulphur HMA was 500 head, which was 200% over the AML. From 1993 through the present the estimated population on the HMA was at or near the upper AML only in 2001, 2004 and 2009. The current estimated population is 291% over AML causing increased competition, reduced horse health (or death), and placing vegetation communities at risk. If horse populations were allowed to continue to double or triple throughout the HMA, wild horses would utilize all of the available AUM's allocated for other resources. This scenario is exacerbated by drought conditions that have occurred over the past several years. Due to the high population the wild horses have used what is believed to be the winter habitat during the summer. Many are traveling outside the HMA in search of water, forage and space. More information is needed to determine the expanse of these movements. Similar conditions in 1999-2001 of high wild horse population combined with drought reduced horse health and several wild horses died on the range. In 2015, several horses

were euthanized due to poor body condition and injuries that occurred from fighting at the limited water sources.

The CCFO has attempted since the completion of the MFP in 1983 to maintain the wild horse population on the Sulphur HMA within the AML. Gathers and removals have been conducted within the HMA 15 times since 1971 to attempt to keep the horse population within the AML or to remove wild horses from the area near Highway 21. Gathers of wild horses within this HMA has proven to be difficult due to heavy tree cover, terrain, and horse movement. As the population increases, it becomes harder to gather the number of horses needed to reduce the population to within AML.

Ancestry

Gentic samples were collected from horse gathers conducted in 1995 and 2006. The samples were sent to Gus Cothran at the University of Kentucky then Texas A&M University for genetic analysis. Reports on these gentic samples were received in 1997 and 2010. The horses sampled in 1995 were all from the very north part of the HMA. The 1997 report stated “The genetic marker data indicate that the Sulphur herd has a clear Spanish component in its ancestry”. The report also stated “Genetic variation within the herd is high enough that there is no immediate concern for this herd in terms of genetic problems”. The 2010 report “Genetic variability of this herd is relatively high and appears to have been stable over a period of about 10 years”. However, because the 2010 report included samples from horses that occur in both the north and south part of the HMA the ancestry of the herd was considered mixed.

Sulphur 2015



Sulphur 2015



Highway Conflict

Currently there are approximately 200 head of wild horses that are within 6 miles of Highway 21. These horses are continually on the highway in search of space, forage and water. They have been seen drinking out of the rumble strips in the road after rain showers. Three horses have been hit and killed in vehicle collisions in the month of October along the area between Desert Experimental Station and Mormon Gap. Other horses have been reported along Highway 21 to the east of the Desert Experimental Station, although no horses have been hit in this area yet. In 2014 and 2015 gather and removals some of the horses along Highway 21 were completed. These removals helped alleviate the problem for 4-6 months, but soon new horses moved back into the same area. When the population is within AML the occurrence of wild horses along

Highway 21 is rare. If the population remains above AML the presence of wild horses along the highway would increase and more vehicle collisions would occur.

PRELIMINARY

4.0 ENVIRONMENTAL IMPACTS

4.1 Introduction

The potential consequences of each alternative are discussed in this section in order to provide the scientific and analytical basis for comparison of each alternative.

4.2 Alternative 1-Proposed Action Alternative: Gather and Remove Excess Wild Horses from the Sulphur HMA and Implement Population Growth Suppression

Rangeland Resources and Vegetation

Competition for forage and water between wild horses, elk, and livestock would be directly reduced. A reduced number of wild horses within the Sulphur HMA would improve 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, thereby maintaining a thriving natural ecological balance. The recovery from the extended drought overgrazing by wild horses would be allowed 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 improve within the allotments as key forage and riparian areas would receive less use, especially during times of drought when wild horses are hardest on these areas.

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

For helicopter round ups, direct impacts to vegetation would include short-term (1 to 10 days) disturbance of native vegetation immediately in and around temporary trap sites and holding and handling facilities. For bait trapping, the direct impacts to vegetation would be longer (5-365 days) but would still be considered short term. 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 vehicles and logistical support equipment and would therefore generally be near or on roads, pullouts, water haul sites or other previously disturbed flat spots. These common practices would minimize the effects of these impacts.

The use of population growth suppression or radio collars on wild horse gathers would not impact rangeland resources and vegetation directly. The use of Population growth suppression would have indirect impacts if wild horse populations were reduced or maintained within AML for longer periods of time. The lower wild horse populations would extend the beneficial impacts described in this section.

At the time of construction of the fences along Highway 21 it would be expected that vegetation would be disturbed; however, this would be limited to construction activities along the fence route that was disturbed during the construction of the highway. Due to the flat terrain and the existing Highway 21 right-of-way, the disturbance to vegetation would be localized at the T-post, cattleguard, and brace locations. Any disturbance would quickly revegetate from seed sources of vegetation along the proposed fences.

Livestock

Livestock located near gather activities may be temporarily disturbed or displaced by helicopter use and 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 on grazing cattle and sheep.

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 toward a thriving ecological condition over the course of 6 to 10 years.

Annual authorized livestock use may be adjusted due to a number of factors, including rangeland health or drought. Managing wild horses at the AML through gather and removals with or without Population growth suppression would help with long-term sustainability of authorized livestock use within the HMAs at the permitted levels. Managing wild horses within AML would reduce the likelihood of adjustments to current active livestock permits attributable to overuse of resources by wild horses. This action would have no direct impact on current livestock permits in terms of active AUMs, season of use and/or terms and conditions. The fences would provide better control of livestock from getting on Highway 21 and causing livestock/vehicle collisions. Adjustments to livestock permits (if any) would be made during the livestock allotment permit renewal process.

Soils

The Proposed Action would have a direct impact to soils in the area immediately around the trap locations. These areas would be disturbed by the hoof action of wild horses when they are concentrated in the trap area to be loaded on the trailers. The disturbance would be $\frac{1}{4}$ to $\frac{1}{2}$ acre in size at each trap and would normally be in area already disturbed like a road, wash, or previous trap site. Most operations would occur when soils are dry or frozen, reducing the impact to soils. Past trap site locations have recovered within a year with vegetation to stabilize the soils. No substantial compaction of soils has occurred from past gather operations.

This analysis assumes that livestock use would continue at levels as established by grazing permit renewal decisions, big game numbers would continue as established by herd management plans and state law and removal of wild horses would be as proposed to within the AML levels specified for HMA.

Removing excess wild horses would make progress towards achieving a “thriving natural ecological balance.” The proposed action would have the indirect impact of aiding grazing allotments currently not meeting Rangeland Health Standard 1 to move towards attainment of that Standard. In general, the reduction of wild horses to proposed levels would reduce utilization

levels, which would allow more residual vegetation and litter to remain on site and protect the soil resource. Reduction of wild horse numbers would aid the allotments to achieve established utilization objectives. Increased litter would provide additional protection from wind and water erosion, promote infiltration, detain surface flows and retard soil moisture loss by evaporation, allowing for better vegetative productivity. Indicators, such as pedestals, bare ground, litter movement, flow patterns, etc. should lessen with implementation of the proposed action. Further, reduced numbers of horses should result in less compaction of wet sites, such as riparian areas and enhance soil and vegetation production there.

Due to the flat terrain and the existing Highway 21 right-of-way, the disturbance to soils from fencing would be localized at the T-post, cattle guard, and brace locations. Any disturbance would quickly re-vegetate from seed sources of vegetation along the proposed fences, stabilizing the soils.

Wetland/Riparian Resources

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 decrease competition for water sources and alleviate pressures exerted on riparian habitat due to wild horses congregating around these sensitive areas. The functionality of riparian resources would improve towards a more properly functioning condition with the removal of excess wild horses and implementation of Population growth suppression.

Wildlife

Wildlife and wildlife habitat would be indirectly affected by the improvements in resource health from the removal of excess horses and Population growth suppression. Implementing the proposed action would reduce utilization on key forage species, improving the quantity and quality of forage available to wildlife and decreasing competition for water sources.

Activities such as using helicopters and roping can have short-term effects on wildlife due to increased noise (i.e. helicopters, roping) and increased human presence in the project area.

Bait and water trapping impacts would vary by individual wildlife species. The intensity of these impacts would be indicated by behaviors ranging from nervous agitation to physical distress. Temporary disturbance and/or displacement would occur to wildlife during set up of traps or the inability to escape from traps; however, since traps are monitored, it is very unlikely wildlife would become trapped. Minimal impacts are expected since trap sites and temporary holding facilities would be located primarily in already disturbed sites. If traps are located in areas of intact wildlife habitat, a wildlife inventory clearance would be required.

Population growth suppression would likely decrease the wild horse population and lessen the competition between wildlife and wild horses. Implementation of the proposed action would

reduce utilization on key forage species, improving the quantity and quality of forage available to wildlife and decreasing competition for water resources.

Special Status Species

Ferruginous Hawk

Ferruginous hawk could be impacted temporarily and short term through increased human disturbance and noise. It is expected that after gather activities have ceased, ferruginous hawks would be expected to return to the area.

Burrowing Owl and Pygmy Rabbits

There is the potential that wild horses might trample and collapse underground dens and burrows for pygmy rabbit, and burrowing owl. If occupied dens are collapsed, the inhabitants could be killed. If they are not killed, additional stress and energy would be expended to dig out the collapsed burrow or dig a new burrow, which would affect the individual fitness of the animal. Although impacts are expected to be minimal to these species, temporary displacement may occur during the gather activities.

Greater Sage-Grouse

Greater sage-grouse and/or its habitat could be impacted temporarily and short term through disturbance and/or displacement. After gather activities have ceased, sage-grouse would be expected to return to the area. Removal of wild horses would benefit sage-grouse in the short-term through improved access to water sources and in the long-term through improved habitat conditions, both at water sources/riparian areas and in upland habitat containing sagebrush.

Big Game Species

Construction of the fence along Highway 21 could impede movement of big game in the area; however, the fence would be constructed in accordance to BLM “wildlife friendly” specifications.

Wild Horses

Normally gather success in the HMA is between 60-70% using the helicopter drive trap method. Because it would take several successive gather operations (2-4) over a period of up to ten years to get the wild horse population of the HMA to low end of AML, bands of horses would continue to leave the boundaries of the HMA into areas not designated for their use in search of space, forage and water. The stated objectives for wild horse herd management area would not be met with just the first gather operation, but would be met over time.

Removal of excess wild horses would improve herd health. Decreased competition for space, forage and water resources would reduce stress and promote healthier animals. The removal of excess animals coupled with anticipated reduced reproduction (population growth rate) as a result of Population growth suppression should result in improved health and condition of mares and foals as the actual population comes into line with the population level that can be sustained with available forage and water resources, and would allow for healthy range conditions (and healthy animals) over the longer-term. Reduced population growth rates with the use of Population growth suppression would be expected to extend the time interval between gathers and reduce

disturbance to individual animals as well as to the herd social structure over the foreseeable future.

Once AML is achieved and fertility treatments are conducted on a regular basis, the number of gathers needed to maintain AML would be reduced. As a result, there would be fewer disturbances to individual animals and the herd and a more stable wild horse social structure would be provided.

Impacts to individual animals may occur as a result of handling stress associated with the gathering, processing, and transportation of animals. The intensity of these impacts varies by individual animal and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality to individual animals from these impacts is infrequent but does occur in 0.5% to 1% of wild horses gathered in a given gather. Other impacts to individual wild horses include separation of members of individual bands of wild horses and removal of animals from the population.

Indirect impacts can occur after the initial stress event, and may include increased social displacement or increased conflict between stallions. These impacts are known to occur intermittently during wild horse gather operations. Traumatic injuries may occur, and typically involve bruises from biting and/or kicking, which do not break the skin.

The gathers would occur frequently making wild horses more difficult to trap. The horses would become very evasive and learn to evade the helicopter by taking cover in treed areas and canyons. Wild horses would also move out of the area when they hear a helicopter, thereby further reducing the overall gather efficiency. Frequent gathers would increase the stress to wild horses, as individuals and as entire herds. It would become increasingly more difficult over time to repeat gathers if the gathers are within two year intervals to successfully treat mares with PZP.

Population Growth Suppression Treatments

One-time application of Population growth suppression at the capture site would not affect normal development of a fetus should the mare already be pregnant when vaccinated, hormone health of the mare, or behavioral responses to stallions (Kirkpatrick et al, 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 et. al, 1997).

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 Population growth suppression treatments are rare in treated mares. Any direct impacts associated with Population growth suppression, 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 impacts from the Population growth suppression injections.

Ransom et al. (2010) found no differences in how PZP-treated and control mares allocated their time between feeding, resting, travel, maintenance, and social behaviors in three populations of wild horses, which is consistent with Powell's (1999) findings in another population. Likewise,

body condition of PZP-treated and control mares did not differ between treatment groups in Ransom et al.'s (2010) study. Turner and Kirkpatrick (2002) found that PZP-treated mares had higher body condition than control mares in another population, presumably because energy expenditure was reduced by the absence of pregnancy and lactation.

In two studies involving a total of four wild horse populations, both Nunez et al. (2009) and Ransom et al. (2010) found that PZP-treated mares were involved in reproductive interactions with stallions more often than control mares, which is not surprising given the evidence that PZP-treated females of other mammal species can regularly demonstrate estrus behavior while contracepted (Shumake and Wilhelm 1995, Heilmann et al. 1998, Curtis et al. 2002). Ransom et al. (2010) found that control mares were herded by stallions more frequently than PZP-treated mares, and Nunez et al. (2009) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Madosky et al. (in press) found this infidelity was also evident during the breeding season in the same population that Nunez et al. (2009) studied, resulting in PZP-treated mares changing bands more frequently than control mares. Long-term implications of these changes in social behavior are currently unknown.

Water/Bait Trapping

Bait and water trapping would be used in some small areas of the HMA to remove small numbers of wild horses or to conduct fertility treatments. This method is slightly less stressful to the horses, but after frequent gathers wild horses would become more difficult to trap using this method. Horses would begin to avoid water sources or areas where the traps are set. During past water trap operations, some wild horses near death have been observed avoiding going into a water trap. Water trap operations had to be stopped and panels removed to allow these horses to drink before dying.

Bait or water trapping generally requires a long window of time for success. Although the trap would be set in a high probability area for capturing excess wild horses residing within the area and at the most effective time periods, time is required for the horses to acclimate to the trap and/or decide to access the water/bait.

Trapping involves setting up portable panels around an existing water source or in an active wild horse area, or around a pre-set water or bait source. The portable panels would be set up to allow wild horses to go freely in and out of the corral until they have adjusted to it. When the wild horses fully adapt to the corral, it is fitted with a gate system. The acclimatization of the horses creates a low stress trap. During this acclimation period the horses would experience some stress due to the panels being setup and perceived access restriction to the water/bait source.

When actively trapping wild horses, the trap would be checked on a daily basis. Horses would be either removed immediately or fed and watered for up to several days prior to transport to a holding facility.

Generally, bait/water trapping is most effective when a specific resource is limited, such as water during the summer months. For example, in some areas, a group of wild horses may congregate at a given watering site during the summer because few perennial water resources are available nearby. Under those circumstances, water trapping could be a useful means of reducing the

number of horses at a given location, which can also relieve the resource pressure caused by too many horses. As the proposed bait and/or water trapping in this area is a lower stress approach to gathering of wild horses, such trapping can continue into the foaling season without harming the mares or foals. Conversely, it has been documented that at times water trapping can be stressful to wild horses due to their reluctance of approaching new, human structures or intrusions. In these situations, wild horses may avoid watering or may travel greater distances in search of other watering sources or panels may have to be removed to let the horse drink.

Transport, Short Term Holding, and Adoption Preparation

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 die during transport.

Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. A small percentage of animals can die during this transition; however, some of these animals are in such poor condition that it is unlikely they would have survived if left on the range.

During the preparation process, potential impacts to wild horses are similar to those that can occur during transport. Injury or mortality during the preparation process is low, but can occur.

Mortality at short-term holding facilities averages approximately 5% (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 die accidentally during sorting, handling, or preparation.

Wild Horses Remaining or Released into the HMA following Gather

The wild horses that are not captured may be temporarily disturbed and move into another area during the gather operations. With the exception of changes to herd demographics, direct population wide impacts have proven, over the last 25 years, to be temporary in nature with most if not all impacts disappearing within hours to several days of when wild horses are released back into the HMA. No observable effects associated with these impacts would be expected within one month of the gather operations or release, except for a heightened awareness of human presence.

As a result of lower density of wild horses across the HMA following the removal of excess horses, competition for resources would be reduced, allowing wild horses to utilize preferred, quality habitat. Confrontations between stallions would also become less frequent, as would fighting among wild horse bands at water sources. Achieving the AML and improving the overall health and fitness of wild horses could also increase foaling and foaling survival rates over the current conditions.

The primary effects to the wild horse population that would be directly related to this proposed gather would be to herd population dynamics, age structure or sex ratio, and subsequently to the growth rates and population size over time. The remaining wild horses not captured would maintain their social structure and herd demographics (age and sex ratios).

Indirect individual impacts are those impacts which occur to individual wild horses after the initial stress event, and may include spontaneous abortions in mares, and 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 skirmish which occurs among older studs following sorting and release into the stud pen, which lasts less than two minutes and ends when one stud retreats. Traumatic injuries usually do not result from these conflicts. These injuries typically involve a bite and/or kicking with bruises which do not break the skin. Like direct individual impacts, the frequency of occurrence of these impacts among a population varies with the individual.

Spontaneous abortion events among pregnant mares following capture is also rare, though poor body condition can increase the incidence of such spontaneous abortions. Given the timing of this gather, spontaneous abortion is not considered to be an issue for the proposed gather.

A few foals may be orphaned during gathers. This may occur due to:

- The mare rejecting the foal. This occurs most often with young mothers or very young foals;
- The foal and mother becoming separated during sorting and cannot be matched;
- The mare dying or being humanely euthanized during the gather;
- A foal being ill, weak, or needing immediate special care that requires removal from the mother;
- The mother not producing enough milk to support the foal.

Occasionally, foals are gathered that were already orphans on the range (prior to the gather) because the mother rejected it or died. These foals are usually in poor, unthrifty condition. Orphans encountered during gathers are cared for promptly and rarely die or have to be euthanized. Nearly all foals that would be gathered would be over four months of age and some would be ready for weaning from their mothers. In private industry, domestic horses are normally weaned between four and six months of age.

Gathering the wild horses during the fall/winter reduces risk of heat stress, although this can occur during any gather, especially in older or weaker animals. Adherence to the design features and techniques used by the gather crew or contractor help minimize the risks of heat stress. Heat stress does not occur often, but if it does, death can result.

Radio Collaring and Tagging

Based on numerous studies that have used radio collars and tags to study the ecology of wild ungulates and equids in particular, these devices have minimal effects on the animals wearing them. In most cases properly fitted collars can be effectively and safely used in free ranging animal studies without collar related injury to the animals.

There are some possible effects from the use of collars on horses. On males, on rare occasions, a collar over an ear has been observed. Also, collars may be fitted too tightly or a horse may grow - tightening the collar. If these are observed, the remote-release function would be deployed remotely. If this failed, the collar would be removed after capturing the animal with bait or water traps. Neck abrasions or sores have not been reported in studies where equids have been collared (e.g. Collins et al. 2014) If neck abrasions or sores caused by a collar are observed and have not

healed within 4 weeks of when it is sighted the collars remote-release would be deployed or the horse would be capture as soon as possible to remove the collar.

No effects are expected from the tags; however, it is possible that they may form an irritation to individuals should vegetation get tangled in the tail. In this case it is expected that the tag will ultimately rip out of the hair (leaving no injury) as the horse rubs it.

The use of collar and tag technology is critical to understanding how free-roaming horses move across the HMA and use increasingly scarce resources. Lack of this information has contributed to the management complexity of this species. Applying this technology to the study of free-roaming horses would provide the opportunity to better understand horse resource use, habitat preference, home range and movement patterns and can be incorporated into investigations of social structure and herd or band dynamics as well as behavioral modifications associated with reproductive management including contraceptive use and sterilization. Such information can be used for future management decisions within the HMA.

Highway 21 Fence

The fence would provide better control of wild horses from getting onto Highway 21 and causing vehicle collisions. This would reduce wild horse injuries and death in the north end of the HMA. This would improve public safety on the highway and the safety of the wild horses in that area.

4.3 Alternative 2 - Gather and Removal of Excess Wild Horses without Population Growth Suppression

Rangeland Resources and Vegetation

Under this alternative, AML would be more difficult to maintain as the growth rate (population increase) would be higher than Alternative 1. This would result in more frequent gathers of the Sulphur HMA once the AML was achieved. Increased gathers would result in greater short-term disturbance to vegetation and soils in and around temporary trap sites and holding and handling facilities.

Impacts of the gather and removal would be similar to those described in proposed action, but there would not be impacts due to released mares being treated with Population growth suppression. However, without slowing reproduction, a steady increase in the number of wild horses through natural foaling rates would result in impacts to vegetation. Removal of excess wild horses would be beneficial to vegetative resources but plant communities may not receive as much opportunity to recover as under Alternative 1.

Livestock

Impacts of the gather and removal without Population growth suppression would be similar to the proposed action; however, wild horse populations may increase at a faster rate and exceed the high end of the AML, increasing competition between livestock and wild horses sooner than Alternative 1.

Soils

Impacts to the soil resource would be essentially the same under Alternative 2 as under the Proposed Action Alternative. Protective vegetative cover and soil surfaces would respond equally well, whether horses were simply removed to reach AML or whether removals and Population growth suppression were implemented.

Wetland/Riparian Resources

Impacts to the soil resource would be essentially the same under Alternative 2 as under the Proposed Action Alternative. However, a faster increase of wild horse populations under this alternative would decrease the term of the beneficial impacts of the proposed action to riparian resources.

Wildlife

Impacts to wildlife would be the same as those described for the proposed action. However, a faster increase of wild horse populations under this alternative would decrease the term of the beneficial impacts of the proposed action to wildlife species.

Wild Horses

Impacts from this alternative would be similar to Alternative 1; however, none of the impacts of Population growth suppression would occur. The lower AML may be achieved through this alternative but the population would exceed the high end of AML sooner than the proposed action.

4.4 Alternative 3-No Action Alternative- No Gather, Removal or use of Population Growth Suppression

Rangeland Resources and Vegetation

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/structural 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. Considerable progress towards the Standards and Guidelines for Healthy Rangelands would not occur.

Livestock

Because horses compete directly with cattle for resources, there is the potential for authorized livestock to be reduced in line with forage availability, which could impact permittees and result in long-term changes in grazing management.

Soils

Under the No Action Alternative, wild horse populations would continue to increase beyond the capacity of the habitat to provide water and forage. Heavy and severe use of desirable vegetation

resources by wild horses would continue and increase. Horses are opportunistic feeders and as their populations increased, may eventually have to choose non-forage species, such as three-awn grass, rabbitbrush and junipers for their survival, which would result in even less litter and residual vegetation left on site than under the current situation. Current indicators of poor soil conditions would remain on the allotments currently not meeting Rangeland Health Standards. Additional indicators, such as increased overland flows, rills and gullies could occur as additional soil was lost from the allotments. Wind erosion could become a factor, where it is not currently. Horses would have to expand their ranges because of the distances they would need to travel from water to obtain forage. Ultimately, the allotments currently meeting Rangeland Health Standard 1, would likely fail to meet Standard 1 (or other standards) as soil conditions deteriorated. It is also likely that wild horses would expand outside their current HMA as long as they were not restricted by adequate fencing. Under the No Action Alternative, additional trailing, trampling and compaction would occur at riparian zones and other water sources, resulting in decreased percolation and water holding capacity and increased surface runoff .

Wetland/Riparian Resources

The No Action Alternative would not have direct impacts to riparian/wetland resources. Indirect impacts would result from continued and increased utilization on riparian vegetation as wild horse populations continued to increase. 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.

Wildlife

Under the No Action Alternative, important wildlife upland habitats would continue to be impacted to a greater degree as the wild horse population was allowed to increase. Downward trends in key perennial species would be expected in conjunction with reductions in ecological condition. As this occurs, vegetation would also experience reduced production levels resulting in reduced forage available to wildlife. Wild horses would increasingly compete with wildlife for habitat suitable for breeding, nesting, foraging and burrowing for the greater sage-grouse pygmy rabbits, and burrowing owls. Sagebrush obligates (i.e. brewers sparrow) dependent on suitable sagebrush ecosystems for nesting and breeding would continue to be depleted. Competition between mule deer, pronghorn and wildlife horses for forage and water resources during the spring and summer months would continue. The potential impacts from disruption due to increased human activity and helicopter use would not occur, nor would the potential impacts from fencing Highway 21.

Wild Horses

The No Action Alternative would not meet the purpose and need and would violate the Wild Free-Roaming Horses and Burros Act, Federal Regulations, BLM/USFS policy and Resource Advisory Council Standards and Guidelines. The BLM realizes that some members of the public advocate “letting nature take its course”, however allowing horses to die of dehydration and starvation would be inhumane treatment and clearly indicates that an overpopulation of horses exists in the HMA. The No Action Alternative would not allow for data collection of genetic information of the wild horses in the Sulphur HMA.

The No Action Alternative would allow wild horse populations to increase beyond the carrying capacity of the rangeland resources within the HMA. As observed during the summer of 2015, the general health of the wild horse population in the HMA would be reduced as horse numbers increased. Large die-offs may occur if the population increased to a point where available forage and water were depleted. This would be especially true during drought or other events such as wildfire.

Short-term herd dynamics would not be impacted under this alternative. Horses would continue to be free-roaming and follow natural patterns. However, if populations increased beyond the carrying capacity, herd dynamics could be impacted because of declines in individual horse health. Near normal populations exhibit a 1:1 sex ratio. Population shifts favoring males could occur as males are better adapted to compete for resources during changing environmental conditions.

Without fencing Highway 21, the number of wild horse/vehicle collisions would increase. This would result in a direct increase of danger of injury and death to the public and to the wild horses.

4.5 Monitoring

Under all alternatives, the following monitoring would be required to determine if the program goals are being met. CCFO personnel would collect and maintain the data.

- Population inventory would be conducted every three years on the HMA as required by the WFRHBA and BLM policy.
- Vegetation monitoring studies (rangeland health, trend and utilization) would continue to be conducted in conjunction with livestock, wildlife and wild horse use.

Proposed Action

- Monitoring would take place utilizing radio collars or radio tags to locate individuals and to record population dynamics, responses to change in animal density, management interventions, seasonal weather and climate.
- Birth rates and population increase would be monitored after Population growth suppression (as funding and priorities allow).

4.6 Mitigation

Appropriate mitigation measures are contained in the proposed action as design features.

4.7 Cumulative Impacts Analysis

Cumulative environmental impacts result when incremental impacts associated with the proposed action or alternatives are combined with other past, present and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Table 6 lists projects in the area which may contribute to cumulative impacts to resources of concern.

Table 4.1. Past, Present and Reasonably Foreseeable Future Actions

Project	Name/Description	Status		
		Past	Present	Future
Wild Horse Planning	Wild Horse and Burro issues, issuance of decisions, AML adjustments and planning documents.	X	X	X
Sulphur HMA Gather and Removals	Past gather and removals done in 1979 (19), 1987 (87), 1988 (74), 1990 (30), 1992 (70), 1993 (119), 1994 (11), 1997 (65), 1999 (94) 2000 (241), 2003 (68), 2006 (180), 2009 (329), 2011 (30), 2014 (30), and 2015 (103). Continued gathers and removals to control populations, monitor herds and administer Population Growth Suppression.	X	X	X
Historic Livestock Grazing (1870s)	1870's to 1934 unregulated grazing on public lands led to vegetative community changes resulting in the current environment.	X		
Livestock Grazing Permit Renewals and authorizations	Livestock Grazing Permit Renewals and authorizations (Atchison Creek, Bennion Spring, Fairview, Hamblin, Indian Peak, North Pine Valley, South Pine Valley, and Stateline).	X	X	X
Range Improvements	Water developments, fences, seedings, etc.	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
Wildfire	Wildfires are common events in southern Utah	X	X	X
Wildfire Suppression and Rehabilitation	Wildfire suppression and rehabilitation activities throughout CCFO.	X	X	X
Range Improvements	Water developments providing water resources to livestock, wildlife, and wild horses. Construction of fences to aid in management of livestock.	X	X	X

Rangeland/Vegetation Resources

Rangeland and vegetative resources in the area have been impacted by a decrease in forage from historic livestock grazing practices, wildfires and wild horses. The impacts from historic livestock grazing are being alleviated through the implementation of Rangeland Health Standards; forage lost from wildfires is being mitigated through post-fire rehabilitation. The proposed action would help to mitigate the loss of forage for wildlife and livestock from wild horse competition. All of these activities would cumulatively help to improve rangeland and vegetation resources in the area.

Range improvement projects may be proposed in the future. Water developments and fences aid in distributing grazing distribution and improve rangeland and vegetative resources. Water developments would provide an additional water source to wild horses. Construction of fences within Sulphur HMA boundaries could inhibit the free-roaming nature of wild horses.

Livestock

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.

Past range improvements including fences, ponds, wells etc. have been completed in the allotments. Range improvements are valuable to livestock managers, allowing permittees to control livestock distribution and limiting concentrated use.

Soils

Soils have been affected by grazing from wildlife, wild horses and livestock as well as other ground disturbing activities. Projects in the field office which have helped to alleviate these impacts include vegetation treatments, livestock grazing rotation systems, decreased livestock utilization and structural projects such as rock gabions. The action alternatives would help to lessen cumulative impacts while the No Action Alternative would increase the impacts.

Wildlife

The greatest impacts to wildlife species in the area are the result of habitat degradation from drought, invasive weeds, livestock and wild horse grazing, OHV use and vegetation treatments on SITLA and private land. The proposed action would help to off-set these impacts by reducing the amount of forage utilized by wild horses.

Wild Horses

Wild horses are primarily impacted by the decrease of available forage resulting from drought, population growth, wildfires, wildlife and livestock grazing, range improvements, noxious weeds and surface disturbing activities. Actions which help to mitigate these impacts include the implementation of Rangeland Standards which help to balance uses to promote healthy rangelands. Past, present and future activities to improve rangeland health include altered livestock grazing utilization levels, wildfire rehabilitation, noxious weed treatments, vegetation treatments and reclamation of surface disturbance.

While all of these activities should help to improve forage, rapidly increasing wild horse populations can still result in an impact to herd health. Past, present and future wild horse removals and fertility treatments would help to mitigate the impacts wild horse health from population levels.

5.0 CONSULTATION AND COORDINATION

5.1 Introduction

Issues analyzed in this EA were identified through the public and agency involvement process described in sections 5.2 and 5.3 below.

5.2 Persons, Groups, & Agencies Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Utah State Historic Preservation Office (SHPO)	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470)	No cultural resources would be affected. The project will be reviewed by SHPO as part of the quarterly submittal as per existing protocol.
Paiute Indian Tribe of Utah	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA (16 USC 1531)	In accordance with the Memorandum of Understanding between the Paiute Tribe of Utah and the BLM, this project does not require formal consultation.

5.3 Summary of Public Participation

Public Involvement was initiated on this Proposed Action on April 8, 2014 by posting on the BLM Electronic Notification Bulletin Board; it was moved to the eplanning web site in August of 2015. Both Iron and Beaver county commissioners have been in contact with the BLM requesting the removal of excess wild horses from private and public lands to within AML. The counties requested the use of fertility treatment methods be used on wild horses to reduce future population growth of wild horses. County resolutions have been passed to manage wild horse population with the counties at AML as directed by the WFRHBA. Additional request over the past two years for removal of wild horses from private and state lands have been received by the land owners adjacent to the Sulphur HMA.

A Preliminary Environmental Assessment (EA) for the Sulphur Wild Horse Gather Plan DOI-BLM-UT-C010-2015-0011-EA is available to the public at the Cedar City Field Office and on-line at http://www.blm.gov/ut/st/en/prog/wild_horse_and_burro.html or at <https://goo.gl/fo638L> for a 30-day review/comment period beginning on December 21, 2015 and ending January 19, 2016. The comments received during this period will be summarized and addressed Appendix 8.

As required by regulation [43 CFR 4740.1(b)], a public hearing was held in Price, Utah on December 8, 2015 and will be held in subsequent years to discuss the use of helicopters and motorized vehicles in the management of Utah BLM's wild horses and burros. This meeting will be advertised in papers and radio stations statewide. This specific gather will be addressed at that public meeting as well as other gathers that may occur within the state of Utah over approximately the next 12 months. Similar meetings have been held each year in Utah since the passage of Federal Land Policy and Management Act of 1976. Comments received from the Preliminary Environmental Assessment (EA) and at those public meetings will be considered and, if applicable, will be addressed in management actions, NEPA documents, and decision documents using the most current direction from the National Wild Horse and Burro Program.

5.4 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.

Dan Fletcher (BLM-CCFO- Assistant Field Office Manager) – Rangeland Standards and Guidelines, Livestock Grazing, Monitoring Report.

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

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

Jeff Reese (BLM-CCFO- Rangeland Management Specialist) – Rangeland Standards and Guidelines, soils, Forestry, Water resources.

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

Gina Ginouves (BLM-CCFO-Planning/NEPA Specialist)- NEPA Review, Editing

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PRELIMINARY

Appendix 1.

Interdisciplinary Team NEPA Checklist

Project Title: Sulphur Wild Horse Gather Plan

NEPA Log Number: EA-UTC010-2015-0011

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 should include NI and NP discussions.

RESOURCES AND ISSUES CONSIDERED:

Determi- nation	Resource	Rationale for Determination	Signature	Date
NI	Air Quality	Air quality in the area is good as is typical of relatively undeveloped areas of the western U.S. The area meets NAAQS. Nothing in the proposal would affect current conditions.	C. Egerton	12/10/14
NP	Areas of Critical Environmental Concern	None within Field Office boundaries.	Dave Jacobson	12-9-2014
NI	Cultural Resources	This gather will have no effect to significant cultural resources. The corral locations will be located on an area of existing disturbance. 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 inventory, the corral area will be moved to another location, which does not contain cultural resources.	Jamie Palmer	12/16/2014
NI	Greenhouse Gas Emissions	Releases of greenhouse gasses (GHG's), such as carbon monoxide, would occur as a result of operation of internal combustion engines being operated during the gather. The removal would occur in a very remote portion of Iron, Beaver and Millard counties and occur using improved county	C. Egerton	12/10/14

Determination	Resource	Rationale for Determination	Signature	Date
		roads and lesser roads. Release of GHG's would be consistent with current levels of releases in the area and very short term.		
NI	Environmental Justice	No minority or economically disadvantaged groups would be affected.	Chad Hunter	11/18/14
NP	Farmlands (Prime or Unique)	There is no soil survey completed for much of this area. There are likely soils in and adjacent to 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	12/10/14
PI	Fish and Wildlife	The area is crucial summer range for mule deer – seasonal restriction is from May 15 – July 15. The gather is not expected to occur between March 1 – July 1. If the gather occurs after July 15 no seasonal restriction for mule deer would be required. A reduction in wild horse numbers would be beneficial to wildlife and habitat.	S. Whitfield	12/01/14
NI	Floodplains	Nothing in the proposal would affect the functioning of a floodplain, nor would any of the alternatives effect the function of a floodplain. Therefore the action is consistent with Executive Order 11988.	C. Egerton	12/10/14
NI	Fuels/Fire Management	There would be no impacts to Fire/Fuels Management.	S Peterson	12/4/14
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 be present in the proposed project area.	E. Ginouves	12/3/14
PI	Hydrologic Conditions	Hydrologic conditions are variable throughout the Sulphur HMA, but in general are thought to be relatively good. Published soil survey data exists only for the extreme south end of the unit in Iron County. Otherwise, the only recent soil data that exists is unpublished data for parts of Beaver and Millard Counties. Fragile soils occur within the HMA. These are considered fragile primarily due to steep slopes. Field examination of some of the allotments during rangeland health evaluations revealed small areas with a moderate or higher departure from normal in soil stability. Excess numbers of horses are removing protective vegetative cover and are contributing to localized active gullying and overland flows. Soil	C. Egerton	12/10/14

Determination	Resource	Rationale for Determination	Signature	Date
		compaction is a localized problem, especially where horses are trailing to and from water sources (ie Mountain Home Spring and Trough). See EA text under “soils” for more details.		
NI	Invasive Species/Noxious Weeds	Horses are contributing to the spread of the noxious weed hound’s tongue within the HMA. Hound’s tongue has been known to occur for the past five years or so within the HMA and is closely associated with pinyon die-off and spread primarily via trailing by horses and elk. There would be a minimal decrease in this impact by reducing wild horse numbers to AML.	Jessica Bulloch	1/22/15
NI	Lands/Access	The project as proposed will not affect any existing rights-of-way as long as prior existing rights are respected and coordinated.	B. Johnson	1/12/15
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	11/18/14
NI	Migratory Birds	A variety of nesting bird and raptors occur in the area. The Sulphur gather is not expected to occur between March 1 – July 1, thus avoiding a large portion of the migratory bird and raptor nesting season. No impacts to nesting birds are expected.	S. Whitfield	12/01/14
NI	Native American Religious Concerns	Based on previous government to government consultations with the Paiute Indian Tribe of Utah, the Hopi Tribe and data from recent ethnographic studies, this action would not adversely affect the physical integrity or limit access to any known sacred sites.	Jamie Palmer	12/16/14
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.	E. Ginouves	12/3/14
PI	Rangeland Health Standards	This is addressed as part of the rangeland health/vegetation section of the EA and in other resource sections such as riparian.	Chad Hunter	11/18/14
NI	Recreation	Recreation in the project area is dispersed, and some displacement may occur during gather	Dave Jacobson	12-9-14

Determination	Resource	Rationale for Determination	Signature	Date
		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.		
NI	Socio-Economics	The proposed action will not in its self change the socio-economics of the area.	Chad Hunter	11/18/14
PI	Soils	Under the current situation of currently permitted livestock numbers, wildlife numbers being what they are and wild horses above AML, inadequate residual vegetation (forage) and litter remain on areas of grazing allotments within the analysis area (as evidenced by Rangeland Health Information). Lack of protective ground cover directly affects the soil's exposure to the erosive elements of 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. For the purposes of the EA, hydrologic conditions and soils are combined.	C. Egerton	12/10/14
NI	Special Status Plant Species	<p>Ostler's ivesia and Pink Egg Milkvetch are known to occur within the project area; However, due to the location and proximity of these species it is expected that there would be little to no impact associated with the proposed action.</p> <p>Ostler's ivesia occurs on steep terrain and large quartzite outcrops at 6400 – 7900 feet elevation. It is likely that wild horse traps/staging areas would not be located in these areas due to elevations and steep slopes at which they occur.</p> <p>Pink Egg Milkvetch is known to occur within the Sulphur HMA. This SSS Plant occurs in PJ, sagebrush, and mixed desert shrub communities at 5800 -7550 feet elevation. This special status species is located in one location which is inaccessible to vehicle travel and would not be expected to be impacted by the proposed action.</p>	Jeff Reese	1/21/15
PI	Special Status Animal Species	<p>The Sulphur HMA contains winter, occupied and brood-rearing habitat (November 1 – July 30) and 1 occupied lek is located in the area for the greater sage-grouse.</p> <p>The gather is not anticipated to occur during March 1 through July 1 to avoid the foaling period. Known locations where the sage-grouse occurs would be avoided for trap and holding facilities. Trap/holding facilities/staging area</p>	S. Whitfield	12/01/14

Determination	Resource	Rationale for Determination	Signature	Date
		would be placed in previously disturbed areas. If the gather occurs after July 30 restrictions for sage-grouse would be removed.		
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	12/10/14
NI	Water Resources/Quality (drinking/surface/ground)	This remote analysis area is characterized by numerous small water sources where water quality is undetermined by the State. There are neither watersheds which contribute to, nor 303(d) listed waters in the analysis area. Drinking water is not present in the analysis area. Waters in the analysis area are primarily Class 4 waters, which are protected for agricultural uses, including livestock watering. It is likely that a large group of horses watering at an undeveloped site, such as a spring or seep could contribute to short-term exceedances of water quality standards (siltation, fecal coliforms, etc.), but such exceedances would be short term as is not the nature of wild horses to rest exceedingly at water sources. The project proposal would not substantially impact water quality. Project stipulations, such as removing wild horses from trap sites as quickly as possible, would minimize adverse impacts to water quality resulting from water trapping operations. A reduction in wild horse numbers to AML levels could have the result of allowing more protective vegetation in riparian areas and could offer some unquantified improvement to water quality.	C. Egerton	12/10/14
PI	Wetlands/Riparian Zones	Project stipulations minimize impacts to wetland/riparian areas. A reduction in wild horse numbers would be expected to be beneficial to most riparian areas associated with the proposed action.	A. Stephens	12/8/14
NP	Wild and Scenic Rivers	There are no WSRs in the field office management area	Dave Jacobson	12-9-14
NI	Wilderness/WSA	The White Rock Range 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.	Dave Jacobson	12-9-14
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	J. Sathe	12/01/14

Determination	Resource	Rationale for Determination	Signature	Date
		really little impact on overstory (woodland) species.		
PI	Vegetation	The proposed management and removal of excess wild horses would benefit vegetative communities.	Chad Hunter	11/18/14
NI	Visual Resources	Project as proposed is consistent with existing VRM classifications and will not impair the landscape in any way.	Dave Jacobson	12-9-14
PI	Wild Horses and Burros	See main text in the EA.	Chad Hunter	11/18/14
NI	Lands with Wilderness Characteristics	The project would not change the character of the landscape in areas that have been identified as having lands with wilderness characteristics such as units UT-C010-108 and UT-C010-103. The areas would still have wilderness characteristics after the proposed gather.	Dave Jacobson	1-22-15

FINAL REVIEW:

Reviewer Title	Signature	Date	Comments
Environmental Coordinator	Gina Ginouves		
Authorized Officer	Elizebeth Burghard		

Wildlife Report

Threatened, Endangered and Candidate Species

Special Status Wildlife Species are recognized by management under BLM’s 6840 Manual and Instruction Memorandum No. UT-2007-078. These species are known to occur or to have a high probability of occurrence within the Great Basin Region based on habitat types within the proposed project area and Utah Natural Heritage Program Records of Occurrence. Table 1 provides a list of threatened, endangered and candidate species that have the potential to occur in Beaver and Iron Counties.

Table 1. FWS List provided by the Information, Planning and Conservation System (IPAC) February 21, 2015

Common Name	Scientific Name	Status	Habitat suitability or known occurrence of the species in or near Project Area.	Determination
California condor	<i>Gymnogyps californianus</i>	E	The Sulphur HMA is in known distribution. Occurrence would be rare and would be closely associated with feeding on carrion.	No Affect ²
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	No suitable habitat is present in the Sulphur HMA.	No Affect ²
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	No suitable habitat is present in the Sulphur HMA.	No Affect ²
Utah prairie dog	<i>Cynomys parvidens</i>	T	No mapped habitat occurs in the	No Affect ²

			Sulphur HMA project area.	
Virgin River chub	<i>Gila seminude</i>	E	No suitable habitat is present in the Sulphur HMA.	No Affect ¹
Western Yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	T	No suitable habitat is present in the Sulphur HMA.	No Affect ²
Woundfin	<i>Plagopterus argentissinum</i>	E	No suitable habitat is present in the Sulphur HMA.	No Affect ¹

¹ The Virgin River chub and Woundfin will not be discussed further. These species are not present in Iron or Beaver Counties. There would be no water depletion from a hydrologic unit (8-digit HUC) in these counties that is occupied by the species in an adjacent county. No further coordination with FWS is required.

² Refer to the Biological Assessment (BA) of Livestock Grazing in Bald Eagle, Mexican Spotted Owl, Southwestern Willow Flycatcher, California condor, and Western Yellow-billed Cuckoo Habitat on Bureau of Land Management Lands, Beaver and Iron Counties, Utah (USDI BLM 2006) for additional information. The U.S. Fish and Wildlife Service concurred with BLM's findings in this BA on 6 May 2006. There has been no substantial new information since the 2006 consultation. These species will not be discussed further in this document.

BLM Sensitive Species

These species are known to occur or to have a high probability of occurrence within the Great Basin Region based on habitat types within the proposed project area and Utah Natural Heritage Program Records of Occurrence.

Ferruginous Hawk (*Buteo regalis*)

The primary breeding habitat for this species is pinyon-juniper and secondary breeding habitat is shrub steppe. Edges of pinyon-juniper woodlands, utility structures (transmission poles), cliffs, and isolated trees serve to provide nesting as well as perching structures for ferruginous hawk.

Burrowing Owl (*Athene cunicularia*)

The primary breeding habitat for this species is high desert scrub; grasslands are used as secondary breeding habitat. Nesting may occur in sparsely vegetated sagebrush-steppe and desert scrub habitats. Abandoned wildlife burrows associated with badger, ground squirrels, etc. are an important component of the habitat.

Pygmy Rabbit (*Brachylagus idahoensis*)

Pygmy rabbits are considered sagebrush obligate and are reliant upon big sagebrush species for cover and food. Primary breeding habitat is shrub steppe communities. Pygmy rabbits occur in the Sulphur HMA.

Greater Sage-Grouse (*Centrocercus urophasianus*)

The Sulphur Herd Management Area contains greater sage-grouse winter, brood-rearing, occupied and winter habitat. There are 3 occupied leks within or close proximity to the Sulphur HMA. Typically proximity and abundance of nesting habitat are key factors for lek locations. Nesting habitat for sage-grouse includes; sagebrush with an understory of native grasses and forbs, with horizontal and vertical structural diversity that provides an insect prey base, herbaceous forage for pre-laying and nesting hens, and cover for the hen while she is incubating.

Brood rearing habitat is typically defined for early-brood rearing and late-brood rearing activities. Late spring/early summer grazing by wild horses would generally impact the habitat and the ability of the vegetative communities to provide adequate cover for brood-rearing sage-grouse. Competition between wild horses and sage-grouse would occur during the winter because sage-grouse feed exclusively on the leaves of sagebrush.

Big Game Species

Big game species that occur in Sulphur HMA include mule deer, Rocky Mountain elk and pronghorn. All three species are year-long residents.

Mule Deer (*Odocoileus hemionus*)

During spring, summer, and early fall, mule deer feed primarily on a variety of forbs and grasses, with light use on big sagebrush, black sagebrush, and bitterbrush. In fall and winter, mule deer shift their diet to shrubs including big sagebrush, black sagebrush, bitterbrush, Gambel oak and curlleaf mountain mahogany.

Rocky Mountain Elk (*Cervus elaphus*)

Elk rely primarily on grasses year-long for forage, but will use some forbs in spring and summer and shrubs in winter.

Pronghorn (*Antilocapra americana*)

Primarily pronghorn forage on a variety of grasses and forbs in late spring, summer, and early fall, and big sagebrush, black sagebrush, winterfat, and bud sage in late fall, winter, and early spring.

APPENDIX 2. Additional Design Features

National Selective Removal Policy

- Gather operations will be conducted in accordance with the Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers (CAWP) described in Appendix 3 and/or the National Wild Horse Gather Contract as adjusted or amended through the National and State wild horse and burro program direction.
- When gather objectives require gather efficiencies of 50-80% or more of the animals to be captured from multiple gather sites (traps) within the HMA, the helicopter drive method and helicopter assisted roping from horseback will be the primary gather methods used. Post-gather, every effort will be made to return released animals (if any) to the same general area from which they were gathered.
- Given a summer or early fall gather window, bait and/or water trapping may be used provided the gather operations timeframe is consistent with current animal and resource conditions. Bait and/or water trapping may also be selected as the primary method to maintain the population within AML and other special circumstances as appropriate.
- An Animal and Plant Inspection Service (APHIS) or other licensed veterinarian may be on-site during gathers, as needed, to examine animals and make recommendations to BLM for care and treatment of wild horses. Decisions to humanely euthanize animals in field situations will be made in conformance with BLM policy.
- Data including sex and age distribution, reproduction, survival, condition class information (using the Henneke rating system), color, size and other information may also be recorded, along with the disposition of that animal (removed or released). Hair and/or blood samples will be acquired every gather in accordance with current guidance (IM # 2009-062), to determine whether BLMs management is maintaining acceptable genetic diversity (avoiding inbreeding depression).
- Public and Safety Nuisance horses that stray along Highway 21 will be the first priority for removal.
- After Public and Safety Nuisance horses along Highway 21 the *Washington Office IM 2010-135, Gather Policy and Selective Removal Criteria and Management Considerations for Reducing Population Growth Rates*, will be followed to prioritize the selection criteria for horses removed from the Sulphur HMA:

a). *Age Class -Four Years and Younger*

Wild horses 4 years of age and younger should be the first priority for removal and placement into the national adoption program.

b). *Age Class – Eleven to Nineteen Years Old*

Wild horses aged 11 to 19 years of age should be removed from the HMA only if management goals and objectives for the herd cannot be achieved by removing horses 4 years and younger or if specific exceptions prevent them from being turned back and left on the range.

c). *Age Class – Five to Ten Years Old*

Wild horses 5 to 10 years of age are the lowest priority for removal and should be removed only if management goals and objectives for the herd cannot be achieved through the removal of animals identified in a) and b) above.

d). *Age Class – Twenty Years and Older*

Wild horses 20 years and older should not be removed from an HMA unless specific exceptions prevent them from being turned back and left on the range. In general, this age group can survive on the HMA but can have greater difficulty adapting to captivity and the stress of handling and shipping if removed.

Data and Research Collection

Wild horse herd data which may be collected includes data to determine population characteristics (age/sex/color/etc.), assess herd health (pregnancy/parasite loading/physical condition/etc.) and determine herd history and genetic profile (hair sampling) (IM # 2009-062).

Wild Horse and Burro Specialists would be responsible for collecting population data. Data collected during the gather and adoption preparation operations may be used to determine which individual wild horses would be selected for return to the HMA and would aid in future analysis in Herd Management Area Plans. The following data may be collected:

1. **Collecting Blood and Hair Samples:**

Unless there is a previously recognized concern regarding low genetic diversity in a particular herd, it is not necessary to collect genetic information at every gather. Typical herds should be sampled every ten to 15 years. The Sulphur HMA is due to have genetic information collect during this 10 year period. Genetic sampling may occur more than once during the period of the proposed action.

Hair samples would be collected and analyzed to compare with establish genetic baseline data (genetic diversity, historical origins, unique markers, and norms for the population). The samples would be collected from the animals released back into the HMA (if any) and from some of the animals removed from the HMA.

Minimum sample size is 25 animals or 25% of the post-gather populations, not to exceed 100 animals per HMA or separate breeding population. A sample is defined as 30 hairs with roots (about the diameter of a pencil). Hair samples would be taken from both mares and studs. Age would not be a defining factor in determining which animals to sample.

The test would consist of looking at 29 systems (17 typing and 12 DNA). The data would be compared to similar data from both domestic and other wild horse populations. The primary value of this data is to compare it to baseline samples to identify genetic drift and any narrowing of diversity through inbreeding. A sample of DNA would be preserved for each horse tested. Samples would be sent to Dr. Gus Cothran at the College of Veterinary Medicine at Texas A&M University for analysis. BLM qualified personnel would collect the hair samples.

Blood and/or hair samples may be taken for the purposes of furthering genetic ancestry studies and incorporation into the Herd Management Area Plans (HMAPs).

2. Herd Health and Viability Data Collection

Data related to age, sex, color, overall health, pregnancy, or nursing status would be collected from each animal captured. The sex and age of each release animal gathered would be recorded during sorting procedures at the gather holding facility and/or at the preparation facility. An estimate of the number, sex and age of horses evading capture would also be recorded.

Information on reproduction and survival would be collected to the extent possible, through documentation of the wild horses captured during the gather, and the age of those released following the gather. In addition, blood or hair samples may be collected from individuals within the herd for health records and/or viability data collection.

3. Characteristics:

Color and size of the animals would be recorded. Any characteristics as to type (or similarities to domestic breeds) would be noted if determined. The genetic analysis would provide a comparison of domestic breeds with the wild horses sampled. Any incidence of negative genetic traits (parrot mouth, club feet etc.) or other abnormalities would be noted as well. A representative population of wild horses depicting historical and desired Spanish Barb characteristics would be selected for release.

4. Condition Class:

A body condition class score would be recorded based on the Henneke System.

5. Other Data:

Other data such as temperament may be collected as determined by the Authorized Officer or Wild Horse Specialist.

Radio Collaring and Tagging

Radio collaring and tagging may be used to do research on habitat interactions, seasonal use of ranges, survival and density dependence, recruitment, fecundity, fertility, population growth and other subjects of value to the management of free-roaming wild horses.

During the gather horses would be fitted with Global Positioning System (GPS) and/or Very High Frequency (VHF) radio collars or radio tags. Collars would be placed on adult horses that are 3 years of age or older and that have a Henneke body condition score of 4 or greater. The design and vendor of the collar would be based on the results of the ongoing USGS radio collar and tag study at the BLM Pauls Valley adoption facility in Oklahoma. All radio collars would have a manual release mechanism in case of emergency, and a timed release which will be programmed to release at the end of the planned study time. No collars would remain on wild horses indefinitely. If the collar drop-off mechanism fails at the end of the study, radio collars would be removed by capturing the individual horses to remove collars manually, or in a management gather.

Tags would be braided into the mane and/or tail tags and held in place with a non-toxic, low temperature curing epoxy resin. As tags are small (<200g) and are not worn around the neck they

are considered of low burden to the animal, and therefore could potentially be worn by animals in lower body condition and of all ages.

Population Growth Suppression

Population growth suppression would be used in the Sulphur HMA to reduce the annual population growth. The primary use of Population growth suppression would be to maintain the population within AML once achieved. It could be used previous to achieving AML if gather success, holding capacity limitations, population growth rates, other national gather priorities or other circumstances prevent achieving AML during a gather.

Authorized and trained personnel would inoculate the mares released back into the Sulphur HMA with an immunocontraceptive vaccine, Porcine Zona Pellucidae (PZP). The PZP vaccine would be administered in accordance with Washington IM 2009-090 (Appendix 6) or the current guidance and best practices directed by the National Program Office. The use of PZP or other Population growth suppression would not be used in a manner that would threaten the health of individual animals or the long-term viability of any herd. A trained applicator would be selected to administer the vaccine during scheduled gathers or during remote delivery (darting) operations. The applicator would be responsible for securing the necessary vaccine, transporting all application materials and other equipment to the gather site, administering the treatment, and filing a treatment report.

All mares captured and treated would be freeze-marked with two 3.5-inch letters on the left hip for treatment tracking purposes. The only exceptions to this requirement would be when mares were treated remotely and can be clearly and specifically identified through photographs.

Population growth suppression will have the greatest beneficial impact where:

1. Annual herd growth rates are typically greater than 5%.
2. Post-gather herd size is estimated to be greater than 50 animals.
3. Treatment of at least 50% of all breeding-age mares within the herd is possible using either application in conjunction with gathers or remote delivery (darting). A maximum of 90% of all mares should be treated and our goal should be to achieve as close to this percentage as possible in order to maximize treatment effects.

If one or more of the conditions above are not met the beneficial impacts would be reduced. However, the use of PZP may still be used to reduce the population growth within an HMA.

The wild horses that are gathered would be subject to one or more of several outcomes listed below.

Temporary Holding Facilities During Gathers

Wild horses gathered would be transported from the trap sites to a temporary holding corral near the HMA in goose-neck trailers or straight-deck semi-tractor trailers. At the temporary holding corral, the wild horses will be aged and sorted into different pens based on sex. The horses would be provided an ample supply of good quality hay and water. Mares and their un-weaned foals would be kept in pens together. All horses identified for retention in the HMA would be penned

separately from those animals identified for removal as excess. All mares identified for release would be treated with Population growth suppression vaccine.

At the temporary holding facility, a veterinarian, when present, would provide 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 foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (AVMA).

Transport, Short Term Holding, and Adoption Preparation

Wild horses removed from the range as excess would be transported to the receiving short-term holding facility in a goose-neck stock trailer or straight-deck semi-tractor trailers. Trucks and trailers used to haul the wild horses would be inspected prior to use to ensure wild horses could be safely transported. Wild horses would be segregated by age and sex when possible and loaded into separate compartments. Mares and their un-weaned foals may be shipped together depending on age and size of foals. Mare and un-weaned foals would not be separated for longer than 12 hours. Transportation of recently captured wild horses would be limited to a maximum of 8 hours.

Upon arrival, recently captured wild horses would off-loaded by compartment and placed in holding pens where they would be 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 would provide 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 foot, and other severe congenital abnormalities) that was not diagnosed previously at the temporary holding corrals at the gather site would be humanely euthanized using methods acceptable to the 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. Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. A small percentage of animals can die during this transition; however, some of these animals are in such poor condition that it is unlikely they would have survived if left on the range. At short-term corral facilities, a minimum of 700 square feet is provided per animal.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption or sale. Preparation involves freeze-marking the animals with a unique identification number, vaccination against common diseases, castration, and de-worming.

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.

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. Observation protocols and ground rules will be developed for the public and will be enforced to keep both public and BLM personal in a safe environment.

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.

Responsibility and Lines of Communication

The local WH&B Specialist / Project Manager from the CCFO, have the direct responsibility to ensure make sure that Instruction Memorandum # 2013-060 Wild Horse and Burro Gather: Management by Incident Command System is followed.

Gather Research Coordinator (GRC) from the CCFO, 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 CCFO 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.

**Appendix 3. Comprehensive Animal Welfare Program
For Wild Horse and Burro Gathers**

Standards

Developed by

The Bureau of Land Management
Wild Horse and Burro Program

in collaboration with

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June 30, 2015

WELFARE ASSESSMENT STANDARDS for GATHERS
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STANDARDS

Standard Definitions

Major Standard: Impacts the health or welfare of WH&Bs. Relates to an alterable equipment or facility standard or procedure. Appropriate wording is “must,” “unacceptable,” “prohibited.”

Minor Standard: unlikely to affect WH&Bs health or welfare or involves an uncontrollable situation. Appropriate wording is “should.”

Lead COR = Lead Contracting Officer’s Representative

COR = Contracting Officer’s Representative

PI = Project Inspector

WH&Bs = Wild horses and burros

FACILITY DESIGN

A. Trap Site and Temporary Holding Facility

1. The trap site and temporary holding facility must be constructed of stout materials and must be maintained in proper working condition, including gates that swing freely and latch or tie easily. **(major)**
2. The trap site should be moved close to WH&B locations whenever possible to minimize the distance the animals need to travel.(minor)
3. If jute is hung on the fence posts of an existing wire fence in the trap wing, the wire should be either be rolled up or let down for the entire length of the jute in such a way that minimizes the possibility of entanglement by WH&Bs unless otherwise approved by the Lead COR/COR/PI. (minor)
4. Fence panels in pens and alleys must be not less than 6 feet high for horses, 5 feet high for burros, and the bottom rail must not be more than 12 inches from ground level. **(major)**
5. The temporary holding facility must have a sufficient number of pens available to sort WH&Bs according to gender, age, number, temperament, or physical condition. **(major)**

- a. All pens must be assembled with capability for expansion. (**major**)
 - b. Alternate pens must be made available for the following: (**major**)
 - 1) WH&Bs that are weak or debilitated
 - 2) Mares/jennies with dependent foals
 - c. WH&Bs in pens at the temporary holding facility should be maintained at a proper stocking density such that when at rest all WH&Bs occupy no more than half the pen area. (minor)
6. An appropriate chute designed for restraining WH&Bs must be available for necessary procedures at the temporary holding facility. This does not apply to bait trapping operations unless directed by the Lead COR/COR/PI. (**major**)
 7. There must be no holes, gaps or openings, protruding surfaces, or sharp edges present in fence panels or other structures that may cause escape or possible injury. (**major**)
 8. Padding must be installed on the overhead bars of all gates and chutes used in single file alleys. (**major**)
 9. Hinged, self-latching gates must be used in all pens and alleys except for entry gates into the trap, which may be secured with tie ropes. (**major**)
 10. Finger gates (one-way funnel gates) used in bait trapping must be constructed of materials approved by the Lead COR/COR/PI. Finger gates must not be constructed of materials that have sharp ends that may cause injuries to WH&Bs, such as "T" posts, sharpened willows, etc. (**major**)
 11. Water must be provided at a minimum rate of ten gallons per 1000 pound animal per day, adjusted accordingly for larger or smaller horses, burros and foals, and environmental conditions, with each trough placed in a separate location of the pen (i.e. troughs at opposite ends of the pen). Water must be refilled at least every morning and evening. (**major**)
 12. The design of pens at the trap site and temporary holding facility should be constructed with rounded corners. (minor)
 13. All gates and panels in the animal holding and handling pens and alleys of the trap site must be covered with materials such as plywood, snow fence, tarps, burlap, etc. approximately 48" in height to provide a visual barrier for the animals. All materials must be secured in place. (**major**)

These guidelines apply:

- a. For exterior fences, material covering panels and gates must extend from the top of the panel or gate toward the ground. **(major)**
 - b. For alleys and small internal handling pens, material covering panels and gates should extend from no more than 12 inches below the top of the panel or gate toward the ground to facilitate visibility of animals and the use of flags and paddles during sorting. (minor)
 - c. The initial capture pen may be left uncovered as necessary to encourage animals to enter the first pen of the trap. (minor)
14. Non-essential personnel and equipment must be located to minimize disturbance of WH&Bs. **(major)**
 15. Trash, debris, and reflective or noisy objects should be eliminated from the trap site and temporary holding facility. (minor)

B. Loading and Unloading Areas

1. Facilities in areas for loading and unloading WH&Bs at the trap site or temporary holding facility must be maintained in a safe and proper working condition, including gates that swing freely and latch or tie easily. **(major)**
2. The side panels of the loading chute must be a minimum of 6 feet high and fully covered with materials such as plywood or metal without holes that may cause injury. **(major)**
3. There must be no holes, gaps or openings, protruding surfaces, or sharp edges present in fence panels or other structures that may cause escape or possible injury. **(major)**
4. All gates and doors must open and close easily and latch securely. **(major)**

5. Loading and unloading ramps must have a non-slip surface and be maintained in a safe and proper working condition to prevent slips and falls. Examples of non-slip flooring would include, but not be limited to, rubber mats, sand, shavings, and steel reinforcement rods built into ramp. There must be no holes in the flooring or items that can cause an animal to trip. **(major)**
6. Trailers must be properly aligned with loading and unloading chutes and panels such that no gaps exist between the chute/panel and floor or sides of the trailer creating a situation where a WH&B could injure itself. **(major)**
7. Stock trailers should be positioned for loading or unloading such that there is no more than 12” clearance between the ground and floor of the trailer for burros and 18” for horses. (minor)

I. CAPTURE TECHNIQUE

A. Capture Techniques

1. WH&Bs gathered on a routine basis for removal or return to range must be captured by the following approved procedures under direction of the Lead COR/COR/PI. **(major)**
 - a. Helicopter
 - b. Bait trapping
2. WH&Bs must not be captured by snares or net gunning. **(major)**
3. Chemical immobilization must only be used for capture under exceptional circumstances and under the direct supervision of an on-site veterinarian experienced with the technique. **(major)**

B. Helicopter Drive Trapping

1. The helicopter must be operated using pressure and release methods to herd the animals in a desired direction and should not repeatedly evoke erratic behavior in the WH&Bs causing injury or exhaustion. Animals must not be pursued to a point of exhaustion; the on-site veterinarian must examine WH&Bs for signs of exhaustion. **(major)**

2. The rate of movement and distance the animals travel must not exceed limitations set by the Lead COR/COR/PI who will consider terrain, physical barriers, access limitations, weather, condition of the animals, urgency of the operation (animals facing drought, starvation, fire, etc.) and other factors. **(major)**
 - a. WH&Bs that are weak or debilitated must be identified by BLM staff or the contractors. Appropriate gather and handling methods should be used according to the direction of the Lead COR/COR/PI. **(major)**
 - b. The appropriate herding distance and rate of movement must be determined on a case-by-case basis considering the weakest or smallest animal in the group (e.g., foals, pregnant mares, or horses that are weakened by body condition, age, or poor health) and the range and environmental conditions present. **(major)**
 - c. Rate of movement and distance travelled must not result in exhaustion at the trap site, with the exception of animals requiring capture that have an existing severely compromised condition prior to gather. Where compromised animals cannot be left on the range or where doing so would only serve to prolong their suffering, euthanasia will be performed in accordance with BLM policy. **(major)**
3. WH&Bs must not be pursued repeatedly by the helicopter such that the rate of movement and distance travelled exceeds the limitation set by the Lead COR/COR/PI. Abandoning the pursuit or alternative capture methods may be considered by the Lead COR/COR/PI in these cases. **(major)**
4. When WH&Bs are herded through a fence line en route to the trap, the Lead COR/COR/PI must be notified by the contractor. The Lead COR/COR/PI must determine the appropriate width of the opening that the fence is let down to allow for safe passage through the opening. The Lead COR/COR/PI must decide if existing fence lines require marking to increase visibility to WH&Bs. **(major)**
5. The helicopter must not come into physical contact with any WH&B. The physical contact of any WH&B by helicopter must be documented by Lead COR/COR/PI along with the circumstances. **(major)**
6. WH&Bs may escape or evade the gather site while being moved by the helicopter. If there are mare/dependent foal pairs in a group being brought to a trap and half of an identified pair is thought to have evaded capture, multiple attempts by helicopter may

- be used to bring the missing half of the pair to the trap or to facilitate capture by roping. In these instances, animal condition and fatigue must be evaluated by the Lead COR/COR/PI or on-site veterinarian on a case-by-case basis to determine the number of attempts that can be made to capture an animal. (**major**)
7. Horse captures must not be conducted when ambient temperature at the trap site is below 10°F or above 95°F without approval of the Lead COR/COR/PI. Burro captures must not be conducted when ambient temperature is below 10°F or above 100°F without approval of the Lead COR/COR/PI. The Lead COR/COR/PI will not approve captures when the ambient temperature exceeds 105 °F. (**major**)

C. Roping

1. The roping of any WH&B must be approved prior to the procedure by the Lead COR/COR/PI. (**major**).
2. The roping of any WH&B must be documented by the Lead COR/COR/PI along with the circumstances. WH&Bs may be roped under circumstances which include but are not limited to the following: reunite a mare or jenny and her dependent foal; capture nuisance, injured or sick WH&Bs or those that require euthanasia; environmental reasons such as deep snow or traps that cannot be set up due to location or environmentally sensitive designation; and public and animal safety or legal mandates for removal. (**major**)
3. Ropers should dally the rope to their saddle horn such that animals can be brought to a stop as slowly as possible and must not tie the rope hard and fast to the saddle so as to intentionally jerk animals off their feet. (**major**)
4. WH&Bs that are roped and tied down in recumbency must be continuously observed and monitored by an attendant at a maximum of 100 feet from the animal. (**major**)
5. WH&Bs that are roped and tied down in recumbency must be untied within 30 minutes. (**major**)
6. If the animal is tied down within the wings of the trap, helicopter drive trapping within the wings will cease until the tied-down animal is removed. (**major**)
7. Sleds, slide boards, or slip sheets must be placed underneath the animal's body to move and/or load recumbent WH&Bs. (**major**)

8. Halters and ropes tied to a WH&B may be used to roll, turn, position or load a recumbent animal, but a WH&B must not be dragged across the ground by a halter or rope attached to its body while in a recumbent position. **(major)**
9. Animals captured by roping must be evaluated by the on-site/on-call veterinarian within four hours after capture, marked for identification at the trap site, and be re-evaluated periodically as deemed necessary by the on-site/on-call veterinarian. **(major)**

D. Bait Trapping

1. WH&Bs may be lured into a temporary trap using bait (feed, mineral supplement, water) or sexual attractants (mares/jennies in heat) with the following requirements:
 - a. The period of time water sources other than in the trap site are inaccessible must not adversely affect the wellbeing of WH&Bs, wildlife or livestock, as determined by the Lead COR/COR/PI. **(major)**
 - b. Unattended traps must not be left unobserved for more than 12 hours. **(major)**
 - c. Mares/jennies and their dependent foals must not be separated unless for safe transport. **(major)**
 - d. WH&Bs held for more than 12 hours must be provided with accessible clean water at a minimum rate of ten gallons per 1000 pound animal per day, adjusted accordingly for larger or smaller horses, burros and foals and environmental conditions. **(major)**
 - e. WH&Bs held for more than 12 hours must be provided good quality hay at a minimum rate of 20 pounds per 1000 pound adult animal per day, adjusted accordingly for larger or smaller horses, burros and foals. **(major)**
 - 1) Hay must not contain poisonous weeds, debris, or toxic substances. **(major)**
 - 2) Hay placement must allow all WH&Bs to eat simultaneously. **(major)**

II. WILD HORSE AND BURRO CARE

A. Veterinarian

1. On-site veterinary support must be provided for all helicopter gathers and on-site or on-call support must be provided for bait trapping. **(major)**

2. Veterinary support must be under the direction of the Lead COR/COR/PI. The on-site/on-call veterinarian will provide consultation on matters related to WH&B health, handling, welfare, and euthanasia at the request of the Lead COR/COR/PI. All decisions regarding medical treatment or euthanasia will be made by the on-site Lead COR/COR/PI. **(major)**

B. Care

1. Feeding and Watering
 - a. Adult WH&Bs held in traps or temporary holding pens for longer than 12 hours must be fed every morning and evening with water available at all times other than when animals are being sorted or worked. **(major)**
 - b. Water must be provided at a minimum rate of ten gallons per 1000 pound animal per day, adjusted accordingly for larger or smaller horses, burros and foals, and environmental conditions, with each trough placed in a separate location of the pen (i.e. troughs at opposite ends of the pen). **(major)**
 - c. Good quality hay must be fed at a minimum rate of 20 pounds per 1000 pound adult animal per day, adjusted accordingly for larger or smaller horses, burros and foals. **(major)**
 - i. Hay must not contain poisonous weeds or toxic substances. **(major)**
 - ii. Hay placement must allow all WH&Bs to eat simultaneously. **(major)**
 - d. When water or feed deprivation conditions exist on the range prior to the gather, the Lead COR/COR/PI should adjust the watering and feeding arrangements in consultation with the onsite veterinarian as necessary to provide for the needs of the animals. (minor)
2. Dust abatement
 - a. Dust abatement by spraying the ground with water must be employed when necessary at the trap site and temporary holding facility. **(major)**

3. Trap Site
 - a. Dependent foals or weak/debilitated animals must be separated from other WH&Bs at the trap site to avoid injuries during transportation to the temporary holding facility. Separation of dependent foals from mares must not exceed four hours unless the Lead COR/COR/PI authorizes a longer time or a decision is made to wean the foals. (**major**)
4. Temporary Holding Facility
 - a. All WH&Bs in confinement must be observed at least once daily to identify sick or injured WH&Bs and ensure adequate food and water. (**major**)
 - b. Foals must be reunited with their mares/jennies at the temporary holding facility within four hours of capture unless the Lead COR/COR/PI authorizes a longer time or foals are old enough to be weaned during the gather. (**major**)
 - c. Non-ambulatory WH&Bs must be located in a pen separate from the general population and must be examined by the BLM horse specialist and/or on-call or on-site veterinarian as soon as possible, no more than four hours after recumbency is observed. Unless otherwise directed by a veterinarian, hay and water must be accessible to an animal within six hours after recumbency. (**major**)
 - d. Alternate pens must be made available for the following: (**major**)
 - 1) WH&Bs that are weak or debilitated
 - 2) Mares/jennies with dependent foals
 - e. Aggressive WH&Bs causing serious injury to other animals should be identified and relocated into alternate pens when possible. (minor)
 - f. WH&Bs in pens at the temporary holding facility should be maintained at a proper stocking density such that when at rest all WH&Bs occupy no more than half the pen area. (minor)

C. Biosecurity

1. Health records for all saddle and pilot horses used on WH&B gathers must be provided to the Lead COR/COR/PI prior to joining a gather, including: **(major)**
 - a. Certificate of Veterinary Inspection (Health Certificate, within 30 days).
 - b. Proof of:
 - 1) A negative test for equine infectious anemia (Coggins or EIA ELISA test) within 12 months.
 - 2) Vaccination for tetanus, eastern and western equine encephalomyelitis, West Nile virus, equine herpes virus, influenza, *Streptococcus equi*, and rabies within 12 months.
2. Saddle horses, pilot horses and mares used for bait trapping lures must not be removed from the gather operation (such as for an equestrian event) and allowed to return unless they have been observed to be free from signs of infectious disease for a period of at least three weeks and a new Certificate of Veterinary Examination is obtained after three weeks and prior to returning to the gather. **(major)**
3. WH&Bs, saddle horses, and pilot horses showing signs of infectious disease must be examined by the on-site/on-call veterinarian. **(major)**
 - a. Any saddle or pilot horses showing signs of infectious disease (fever, nasal discharge, or illness) must be removed from service and isolated from other animals on the gather until such time as the horse is free from signs of infectious disease and approved by the on-site/on-call veterinarian to return to the gather. **(major)**
 - b. Groups of WH&Bs showing signs of infectious disease should not be mixed with groups of healthy WH&Bs at the temporary holding facility, or during transport. (minor)
4. Horses not involved with gather operations should remain at least 300 yards from WH&Bs, saddle horses, and pilot horses being actively used on a gather. (minor)

III. HANDLING

A. Willful Acts of Abuse

1. Hitting, kicking, striking, or beating any WH&B in an abusive manner is prohibited. **(major)**
2. Dragging a recumbent WH&B without a sled, slide board or slip sheet is prohibited. Ropes used for moving the recumbent animal must be attached to the sled, slide board or slip sheet unless being loaded as specified in Section II. C. 8. **(major)**
3. There should be no deliberate driving of WH&Bs into other animals, closed gates, panels, or other equipment. (minor)
4. There should be no deliberate slamming of gates and doors on WH&Bs. (minor)
5. There should be no excessive noise (e.g., constant yelling) or sudden activity causing WH&Bs to become unnecessarily flighty, disturbed or agitated. (minor)

B. General Handling

1. All sorting, loading or unloading of WH&Bs during gathers must be performed during daylight hours except when unforeseen circumstances develop and the Lead COR/CO/PI approves the use of supplemental light. **(major)**
2. WH&Bs should be handled to enter runways or chutes in a forward direction. (minor)
3. WH&Bs should not remain in single-file alleyways, runways, or chutes longer than 30 minutes. (minor)
4. Equipment except for helicopters should be operated and located in a manner to minimize flighty behavior . (minor)

C. Handling Aids

1. Handling aids such as flags and shaker paddles must be the primary tools for driving and moving WH&Bs during handling and transport procedures. Contact of the flag or paddle end of primary handling aids with a WH&B is allowed. Ropes looped around the hindquarters may be used from horseback or on foot to assist in moving an animal forward or during loading. **(major)**

2. Electric prods must not be used routinely as a driving aid or handling tool. Electric prods may be used in limited circumstances only if the following guidelines are followed:
 - a. Electric prods must only be a commercially available make and model that uses DC battery power and batteries should be fully charged at all times. **(major)**
 - b. The electric prod device must never be disguised or concealed. **(major)**
 - c. Electric prods must only be used after three attempts using other handling aids (flag, shaker paddle, voice or body position) have been tried unsuccessfully to move the WH&Bs. **(major)**
 - d. Electric prods must only be picked up when intended to deliver a stimulus; these devices must not be constantly carried by the handlers. **(major)**
 - e. Space in front of an animal must be available to move the WH&B forward prior to application of the electric prod. **(major)**
 - f. Electric prods must never be applied to the face, genitals, anus, or underside of the tail of a WH&B. **(major)**
 - g. Electric prods must not be applied to any one WH&B more than three times during a procedure (e.g., sorting, loading) except in extreme cases with approval of the Lead COR/COR/PI. Each exception must be approved at the time by the Lead COR/COR/PI. **(major)**
 - h. Any electric prod use that may be necessary must be documented daily by the Lead COR/COR/PI including time of day, circumstances, handler, location (trap site or temporary holding facility), and any injuries (to WH&B or human). **(major)**

IV. TRANSPORTATION

A. General

1. All sorting, loading, or unloading of WH&Bs during gathers must be performed during daylight hours except when unforeseen circumstances develop and the Lead COR/CO/PI approves the use of supplemental light. **(major)**

2. WH&Bs identified for removal should be shipped from the temporary holding facility to a BLM facility within 48 hours. (minor)
 - a. Shipping delays for animals that are being held for release to range or potential on-site adoption must be approved by the Lead COR/COR/PI. (**major**)
3. Shipping should occur in the following order of priority; 1) debilitated animals, 2) pairs, 3) weanlings, 4) dry mares and 5) studs. (minor)
4. Planned
5. transport time to the BLM preparation facility from the trap site or temporary holding facility must not exceed 10 hours. (**major**)
6. WH&Bs should not wait in stock trailers and/or semi-trailers at a standstill for more than a combined period of three hours during the entire journey. (minor)

B. Vehicles

1. Straight-deck trailers and stock trailers must be used for transporting WH&Bs. (**major**)
 - a. Two-tiered or double deck trailers are prohibited. (**major**)
 - b. Transport vehicles for WH&Bs must have a covered roof or overhead bars containing them such that WH&Bs cannot escape. (**major**)
2. WH&Bs must have adequate headroom during loading and unloading and must be able to maintain a normal posture with all four feet on the floor during transport without contacting the roof or overhead bars. (**major**)
3. The width and height of all gates and doors must allow WH&Bs to move through freely. (**major**)
4. All gates and doors must open and close easily and be able to be secured in a closed position. (**major**)
5. The rear door(s) of the trailers must be capable of opening the full width of the trailer. (**major**)
6. Loading and unloading ramps must have a non-slip surface and be maintained in proper working condition to prevent slips and falls. (**major**)

7. Transport vehicles more than 18 feet and less than 40 feet in length must have a minimum of one partition gate providing two compartments; transport vehicles 40 feet or longer must have at least two partition gates to provide a minimum of three compartments. **(major)**
8. All partitions and panels inside of trailers must be free of sharp edges or holes that could cause injury to WH&Bs. **(major)**
9. The inner lining of all trailers must be strong enough to withstand failure by kicking that would lead to injuries. **(major)**
10. Partition gates in transport vehicles should be used to distribute the load into compartments during travel. (minor)
11. Surfaces and floors of trailers must be cleaned of dirt, manure and other organic matter prior to the beginning of a gather. **(major)**

C. Care of WH&Bs during Transport Procedures

1. WH&Bs that are loaded and transported from the temporary holding facility to the BLM preparation facility must be fit to endure travel. **(major)**
 - a. WH&Bs that are non-ambulatory, blind in both eyes, or severely injured must not be loaded and shipped unless it is to receive immediate veterinary care or euthanasia. **(major)**
 - b. WH&Bs that are weak or debilitated must not be transported without approval of the Lead COR/COR/PI in consultation with the on-site veterinarian. Appropriate actions for their care during transport must be taken according to direction of the Lead COR/COR/PI. **(major)**
2. WH&Bs should be sorted prior to transport to ensure compatibility and minimize aggressive behavior that may cause injury. (minor)
3. Trailers must be loaded using the minimum space allowance in all compartments as follows: **(major)**
 - a. 12 square feet per adult horse.
 - b. 6.0 square feet per dependent horse foal.
 - c. 8.0 square feet per adult burro.
 - d. 4.0 square feet per dependent burro foal.

4. The Lead COR/COR/PI in consultation with the receiving Facility Manager must document any WH&B that is recumbent or dead upon arrival at the destination.
(major)
 - a. Non-ambulatory or recumbent WH&Bs must be evaluated on the trailer and either euthanized or removed from the trailers using a sled, slide board or slip sheet.
(major)
5. Saddle horses must not be transported in the same compartment with WH&Bs.
(major)

V. EUTHANASIA or DEATH

A. Euthanasia Procedure during Gather Operations

1. An authorized, properly trained, and experienced person as well as a firearm appropriate for the circumstances must be available at all times during gather operations. When the travel time between the trap site and temporary holding facility exceeds one hour or if radio or cellular communication is not reliable, provisions for euthanasia must be in place at both the trap site and temporary holding facility during the gather operation. (major)
2. Euthanasia must be performed according to American Veterinary Medical Association euthanasia guidelines (2013) using methods of gunshot or injection of an approved euthanasia agent. (major)
3. The decision to euthanize and method of euthanasia must be directed by the Authorized Officer or their Authorized Representative(s) that include but are not limited to the Lead COR/COR/PI who must be on site and may consult with the on-site/on-call veterinarian. (major)
4. Photos needed to document an animal's condition should be taken prior to the animal being euthanized. No photos of animals that have been euthanized should be taken. An exception is when a veterinarian or the Lead COR/COR/PI may want to document certain findings discovered during a postmortem examination or necropsy. (minor)
5. Any WH&B that dies or is euthanized must be documented by the Lead COR/COR/PI including time of day, circumstances, euthanasia method, location, a

- description of the age, gender, and color of the animal and the reason the animal was euthanized. (**major**)
6. The on-site/on-call veterinarian should review the history and conduct a postmortem physical examination of any WH&B that dies or is euthanized during the gather operation. A necropsy should be performed whenever feasible if the cause of death is unknown. (minor)

B. Carcass Disposal

1. The Lead COR/COR/PI must ensure that appropriate equipment is available for the timely disposal of carcasses when necessary on the range, at the trap site, and temporary holding facility. (**major**)
2. Disposal of carcasses must be in accordance with state and local laws. (**major**)
3. WH&Bs euthanized with a barbiturate euthanasia agent must be buried or otherwise disposed of properly. (**major**)
4. Carcasses left on the range should not be placed in washes or riparian areas where future runoff may carry debris into ponds or waterways. Trenches or holes for buried animals should be dug so the bottom of the hole is at least 6 feet above the water table and 4-6 feet of level earth covers the top of the carcass with additional dirt mounded on top where possible. (minor)

CAWP

Required Documentation and Responsibilities of Lead COR/COR/PI

Required Documentation

Section	Documentation
II.B.5	Helicopter contact with any WH&B.
II.C.2	Roping of any WH&B.
III.B.3.a and III.B.4.b	Reason for allowing longer than four hours to reunite foals with mares/jennies. Does not apply if foals are being weaned.
III.C.1	Health status of all saddle and pilot horses.
IV.C.2.h	All uses of electric prod.
V.C.4	Any WH&B that is recumbent or dead upon arrival at destination following transport.
VI.A.5	Any WH&B that dies or is euthanized during gather operation.

Responsibilities

Section	Responsibility
I.A.10	Approve materials used in construction of finger gates in bait trapping
II.A.1	Direct gather procedures using approved gather technique.
II.B. 2	Determine rate of movement and distance limitations for WH&B helicopter gather.
II.B.2.a	Direct appropriate gather/handling methods for weak or debilitated WH&B.
II.B.3	Determine whether to abandon pursuit or use other capture method in order to avoid repeated pursuit of WH&B.
II.B.4	Determine width and need for visibility marking when using opening in fence en route to trap.
II.B.6	Determine number of attempts that can be made to capture the missing half of a mare/foal pair that has become separated.
II.B.7	Determine whether to proceed with gather when ambient temperature is outside the range of 10°F to 95°F for horses or 10°F to 100°F for burros.
II.C.1	Approve roping of any WH&B.
II.D.1.a	Determine period of time that water outside a bait trap is inaccessible such that wellbeing of WH&Bs, wildlife, or livestock is not adversely affected.
III.A.2	Direct and consult with on-site/on-call veterinarian on any matters related to WH&B health, handling, welfare and euthanasia.

- III.B.1.e Adjust feed/water as necessary, in consultation with onsite/on call veterinarian, to provide for needs of animals when water or feed deprivation conditions exist on range.
- III.B.4.c Determine provision of water and hay to non-ambulatory animals.
- IV.C.2.g Approve use of electric prod more than three times, for exceptional cases only.
- V.A.1 Approve sorting, loading, or unloading at night with use of supplemental light.
- V.A.2.a Approve shipping delays of greater than 48 hours from temporary holding facility to BLM facility.
- V.C.1.b Approve of transport and care during transport for weak or debilitated WH&B.
- VI.A.3 Direct decision regarding euthanasia and method of euthanasia for any WH&B; may consult with on-site/on-call veterinarian.
- VI.B.1 Ensure that appropriate equipment is available for carcass disposal.

Appendix 4. Standard BLM Operating Procedures for Population Growth Suppression Treatment

WO IM 2009-090, Attachment 1

The following management and monitoring requirements are part of the proposed action:

The 22 month pelleted Porcine zona pellucida (PZP) vaccine would be administered by trained BLM personnel.

The Population growth suppression drug would be administered with two separate injections: (1) a liquid dose of PZP is administered using an 18 gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14 gauge needle. These are loaded on the end of a trocar (dry syringe with a metal rod) which is loaded into the jabstick which then pushes the pellets into the breeding mares being returned to the range. The pellets and liquid are designed to release the PZP over time similar to a time release cold capsule.

Delivery of the vaccine would be as an intramuscular injection while the mares are restrained in a working chute. 0.5 cubic centimeters (cc) of the PZP vaccine would be emulsified with 0.5 cc of adjuvant (a compound that stimulates antibody production) and loaded into the delivery system. The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid and pellets would be propelled into the left hind quarters of the mare, just below the imaginary line that connects the point of the hip and the point of the buttocks.

All treated mares would be freeze-marked with two 3.5-inch letters on the left hip for treatment tracking purposes. The only exception to this requirement is that each treated mare can be clearly and specifically identified through photographs or markings. This step is to enable researchers to positively identify the animals during the research project as part of the data collection phase.

At a minimum, estimation of population growth rates using helicopter or fixed wing surveys would be conducted the year preceding any subsequent gather. During these surveys it would not be necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of mares).

Population growth rates of herds selected for intensive monitoring would be estimated every year post-treatment using helicopter or fixed wing surveys. During these surveys it would not be necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of mares). During routine HMA field monitoring (on-the-ground), if data on mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.

A PZP Application Data sheet would be used by the field applicators to record all the pertinent data relating to identification of the mare (including a photograph if the mares are not freeze-marked) and date of treatment. Each applicator would submit a PZP Application Report and accompanying narrative and data sheets would be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken would be maintained at the field office.

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

PRELIMINARY

Appendix 5. Fence Specifications

Statement of Work Highway 21 Fence

A. Description of Work

1. Furnish labor, equipment, supplies and materials except for the specified Government-furnished property to do the following:
 - a. Construct an 18 mile fence extension of four strands (3 barbed and 1 barbless), which would create a holding pasture within the allotment. The fence would be located adjacent to existing roads and tie into a private land fence. The fence would be built on the property line. Wire spacing from the ground up will be 16", 6", 8" and 12", and posts will be 16.5 feet apart with two stays between posts. Fence should be flagged immediately as constructed for visibility to eliminate wildlife collision concerns.

B. Environmental Considerations

1. Surface disturbance: No road construction or blading of vegetation shall be allowed. Vegetation may be crushed by vehicles driving over it.

C. Work Details

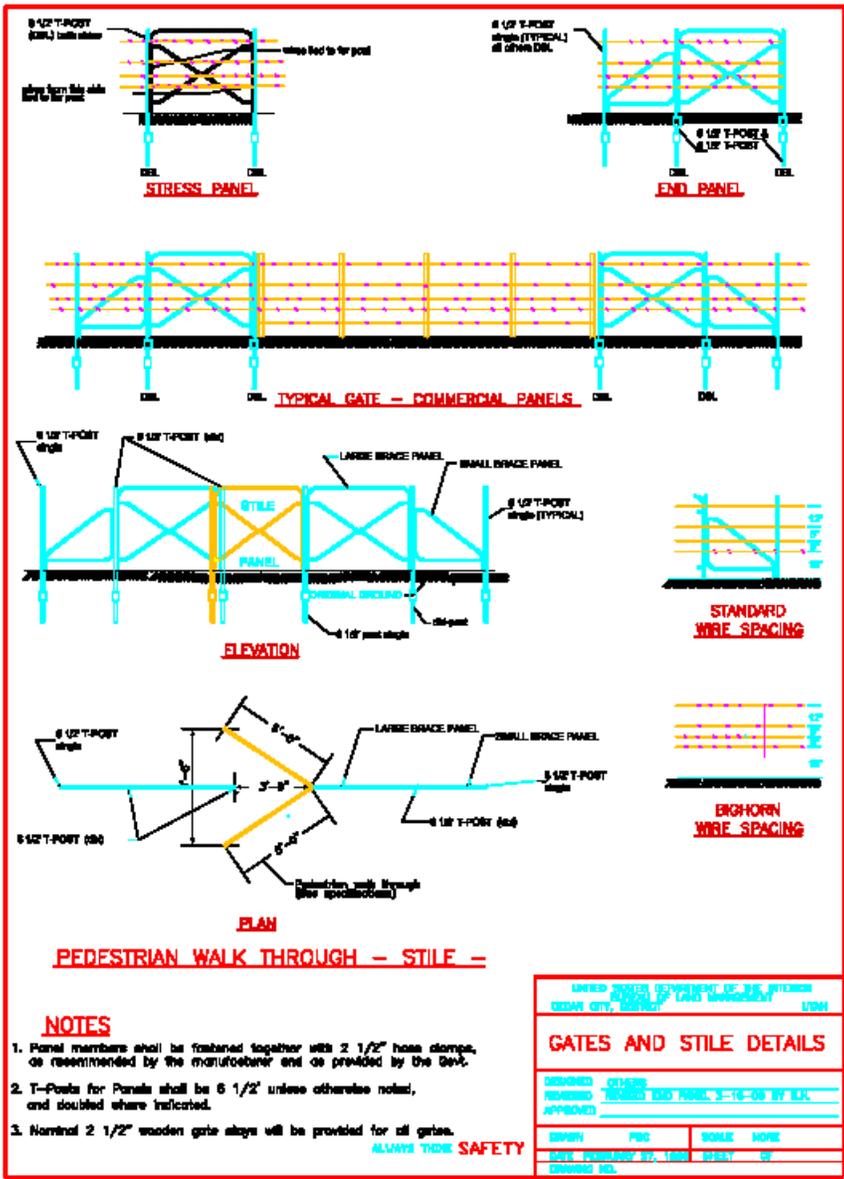
1. General: Construct fence as shown on the drawings or as staked in the field. Cedar posts shall not be used in the placement of commercial steel panels or braces. However, treated post may be used at gates and brace panels. Steel posts shall be driven to depths shown on the drawings.
2. Drive steel posts into the ground to the depth shown on the drawings or until anchor plat is slightly below the ground surface. Place posts in the holes and compact the post solidly in position with existing soil. Steel line posts shall be a maximum of 16.5 feet.
3. Stress Panels: Shall consist of a single large brace panel installed in alignment with the fence. Construct stress panels on crests of hills and a maximum of 80 rods center-to-center for barbed wire sections. In addition, stress panels are required at points between which wire is to be stretched. A stress panel shall be installed on the edge of a hilltop and at the bottom of the hill. Stress panels may be used in crossing small drainages as agreed to by the contracting officer. Refer to Stress Panel installation as shown on drawings.
4. End Panels: Shall consist of a large and small brace panel installed in alignment with the fence. Construct end panels at the end of fence runs unless shown otherwise on the drawings. Anchor bolts may be used in place of end panels to secure the fence into rocks. Refer to End Panel installation as shown on drawings.
5. Corner Panels: Shall consist of two commercial end panels installed in alignment with the fence. Refer to Corner Panel installation as shown on drawings.

6. Stone Deadman will be installed at minor drainage crossings to maintain tight wires and the 16 inch bottom wire spacing.
7. Wire: All wire shall be tightly and uniformly stretched and shall be snugly stapled to wood posts or securely attached to steel posts with standard wire clips. Wire is properly stretched when it is spring to the touch. Drive staples in to wood until the staple comes in contact with the wire against the post, but not so tight as to crimp the wire or prevent free movement of the wire between the post and the staple. Do not drive staples parallel to the grain of the wood. Terminate wire at each end post, gate post, corner post or stress panel by wrapping wire around the post two times and tie off by wrapping the incoming wire a minimum of four times. Refer to Drawings for wire spacing from the ground up (16", 6", 8" and 12").
8. Gates: Shall be installed in accordance with the Work Data Sheet and as shown on the drawings. All gates shall be left open except for when livestock are present.
9. Mechanical Gate Closures: Line up the latch with the gate. Adjust latch assembly after installation so that the latch does not bind and the gate hangs properly. Install a smooth wire loop 5 inches from the ground securely connected to the gatepost and shaped so that the gate stay shall be securely held in place.
10. Work data Sheets: These sheets designate the fence type, number of end and stress panels, wire and post spacing, number and type of fence corners, the number or gates and number and type of fence drainage crossings required of this project.

Highway 21 Fence Materials List – 18 mile

Materials Description	Estimated Quantity	Unit
Barbed Wire	220	Rolls
Barbless Wire	72	Rolls
Posts, Steel 5.5 Feet	5760	Each
Posts, Steel 6.5 Feet	360	Each
Metal Stays (100/bundle)	72	Bundles of 100
Commercial Steel Panel (H Panel)	108	Each
Commercial Steel Brace (B Brace)	108	Each
Fence Clips	2340	Each
Wood Gate Stays	80	Each

Materials Description	Estimated Quantity	Unit
Wood Gate Stays	24	Each
Gate Closure	4	Each
Wood Gate Posts	24	Each



Appendix 6. Population Modeling

Sulphur HMA 2015 Population Modeling

To complete the population modeling for the Sulphur HMA, 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 Population growth suppression 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 Winn Equus population for the Garfield HMA.

Sex ratio at Birth:

42% Females

58% Males

The following percent effectiveness of Population growth suppression was utilized in the population modeling for Alternative I: Year 1: 94%

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

Contraception Criteria

Age	Percentages for Fertility Treatment
1	100%
2	100%
3	100%
4	100%
5	100%

Age	Percentages for Fertility Treatment
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: 2016
- Initial Gather Year: 2016
- Gather interval: regular interval of three years
- Gather for fertility treatment regardless of population size: Yes
- Continue to gather after reduction to treat females: Yes
- Sex ratio at birth: 58% males
- Percent of the population that can be gathered: 80%
- Minimum age for long term holding facility horses: Not Applicable (Gate Cut)
- 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:

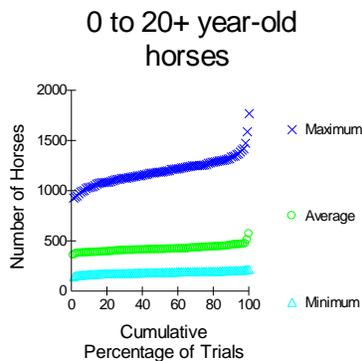
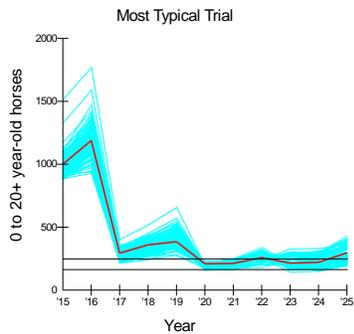
Population Modeling Parameters Modeling Parameter	Alternative 1: Proposed Action-Gather and Removal of Excess Wild Horses and Application of Population Growth Suppression	Alternative 2: Gather and Removal of Excess Wild Horses without Population Growth Suppression.	Alternative 3: No Action – Continue Existing Management. No Gather and Removal

Management by removal only	No	Yes	No
Threshold Population Size Following Gathers	165	165	N/A
Target Population Size Following gather	165	165	N/A
Gather for Population Growth Suppression regardless of population size	Yes	No	N/A
Gather continue after removals to treat additional females	Yes	Yes	N/A

Effectiveness of Population Growth Suppression: Year 1	94%	N/A	N/A
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Results Alternative 1: Proposed Action –Gather and Removal of Excess Wild Horses and Application of Population Growth Suppression.

Population Size

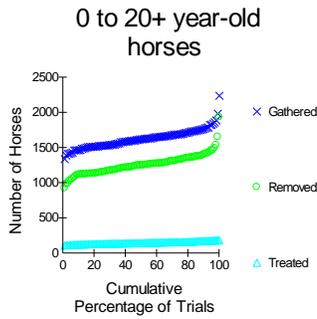


Population Sizes in 11 Years*

	Minimum	Average	Maximum
Lowest Trial	145	360	931
10th Percentile	170	386	1039
25th Percentile	180	402	1116
Median Trial	190	417	1190
75th Percentile	199	439	1264
90th Percentile	207	460	1343
Highest Trial	219	572	1772

* 0 to 20+ year-old horses

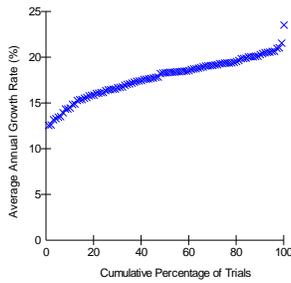
In 11 years and 100 trials, the lowest number 0 to 20+ year-old horses ever obtained was 145 and the highest was 1772. In half the trials, the minimum population size in 11 years was less than 190 and the maximum was less than 1190. The average population size across 11 years ranged from 360 to 572.



Totals in 11 Years*

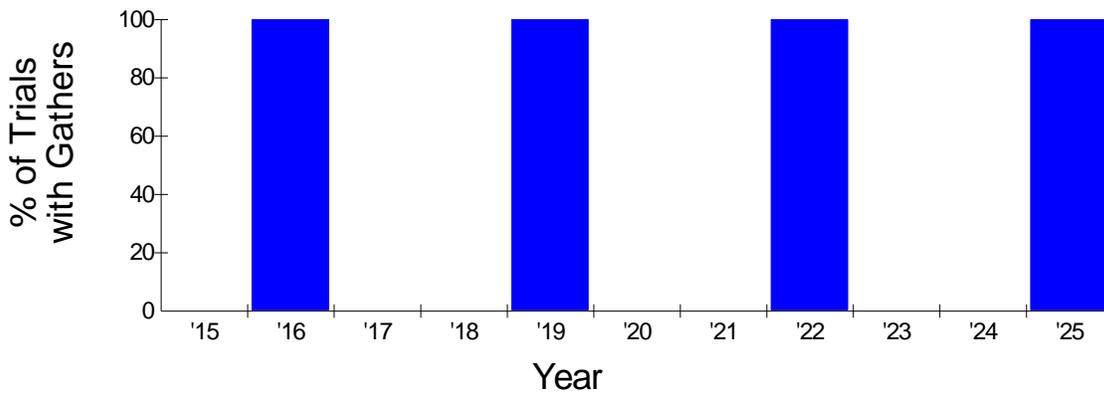
	Gathered	Removed	Treated
Lowest Trial	1340	926	110
10th Percentile	1468	1118	126
25th Percentile	1530	1154	136
Median Trial	1622	1250	146
75th Percentile	1694	1330	161
90th Percentile	1772	1404	176
Highest Trial	2240	1935	186

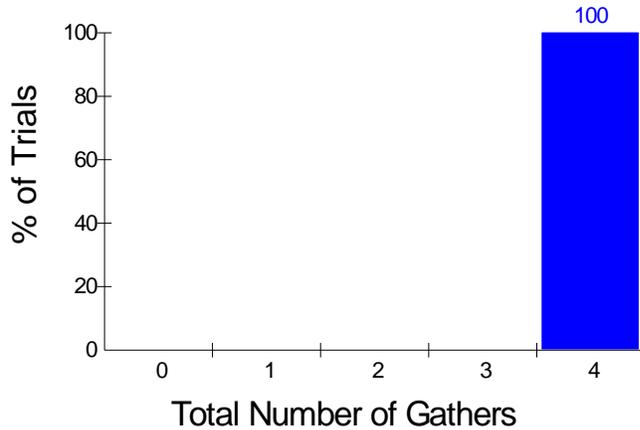
* 0 to 20+ year-old horses



Average Growth Rate in 10 Years

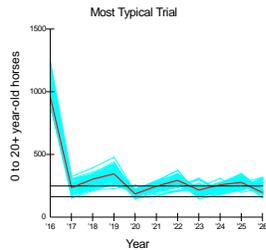
Lowest Trial	12.6
10th Percentile	14.7
25th Percentile	16.4
Median Trial	18.3
75th Percentile	19.4
90th Percentile	20.4
Highest Trial	23.6



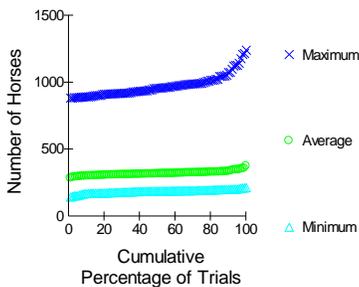


Results Alternative 2: Gather and Removal of Excess Wild Horses without Population Growth Suppression

Population Size



0 to 20+ year-old horses



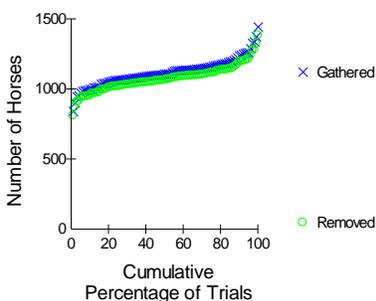
Population Sizes in 11 Years*

	Minimum	Average	Maximum
Lowest Trial	145	285	884
10th Percentile	170	301	893
25th Percentile	178	309	916
Median Trial	189	318	958
75th Percentile	196	327	997
90th Percentile	202	337	1075
Highest Trial	215	375	1242

* 0 to 20+ year-old horses

In 11 years and 100 trials, the lowest number 0 to 20+ year-old horses ever obtained was 145 and the highest was 1242. In half the trials, the minimum population size in 11 years was less than 189 and the maximum was less than 958. The average population size across 11 years ranged from 285 to 375.

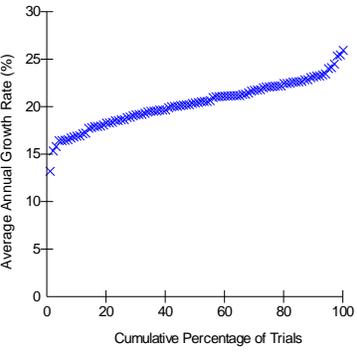
0 to 20+ year-old horses



Totals in 11 Years*

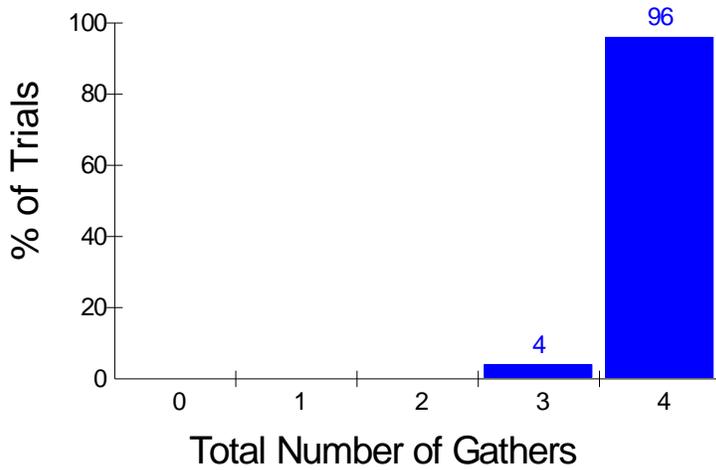
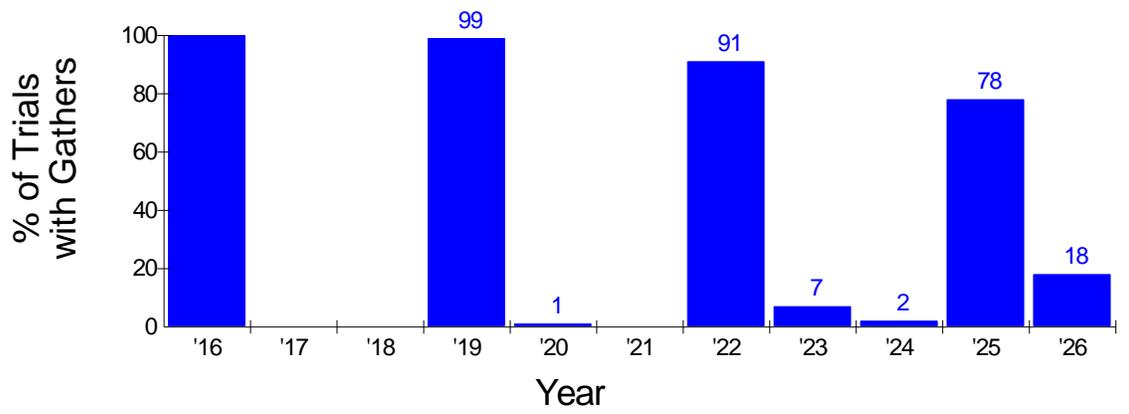
	Gathered	Removed
Lowest Trial	842	811
10th Percentile	1000	960
25th Percentile	1065	1022
Median Trial	1109	1068
75th Percentile	1162	1118

90th Percentile 1242 1198
 Highest Trial 1445 1385
 * 0 to 20+ year-old horses



Average Growth Rate in 10 Years

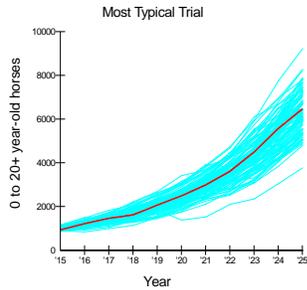
Lowest Trial 13.2
 10th Percentile 17.0
 25th Percentile 18.7
 Median Trial 20.5
 75th Percentile 22.1
 90th Percentile 23.2
 Highest Trial 26.0



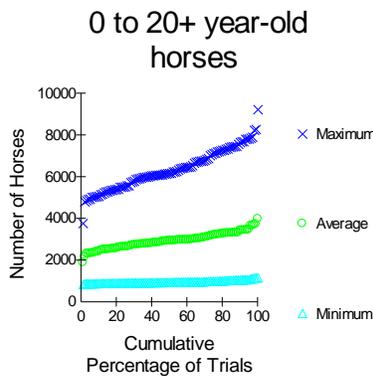
Results Alternative 3: No Action – No Gather, Removal or use of Population Growth Suppression

Results - No Action

Population Size



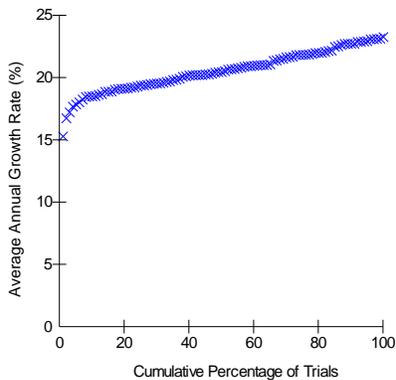
Population Sizes in 11 Years*



	Minimum	Average	Maximum
Lowest Trial	851	1899	3773
10th Percentile	896	2451	5118
25th Percentile	918	2653	5558
Median Trial	950	2944	6178
75th Percentile	1001	3223	7137
90th Percentile	1068	3441	7673
Highest Trial	1168	3988	9231

* 0 to 20+ year-old horses

In 11 years and 100 trials, the lowest number 0 to 20+ year-old horses ever obtained was 851 and the highest was 9231. In half the trials, the minimum population size in 11 years was less than 950 and the maximum was less than 6178. The average population size across 11 years ranged from 1899 to 3988.



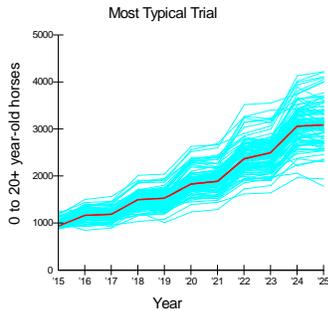
Average Growth Rate in 10 Years

Lowest Trial	15.3
10th Percentile	18.5
25th Percentile	19.4
Median Trial	20.5
75th Percentile	21.9
90th Percentile	22.8
Highest Trial	23.3

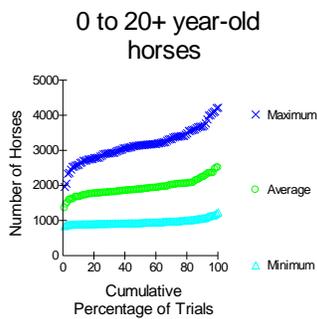
* 0 to 20+ year-old horses

Alternative Considered but Not Analyzed: Population Growth Suppression Only.

Population Size



Population Sizes in 11 Years*

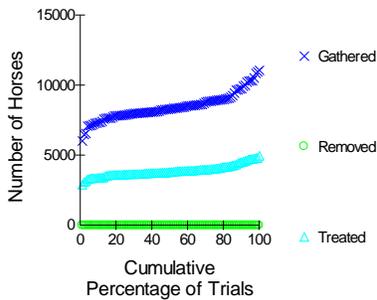


	Minimum	Average	Maximum
Lowest Trial	851	1363	1968
10th Percentile	902	1679	2628
25th Percentile	918	1793	2882
Median Trial	944	1892	3159
75th Percentile	1000	2047	3410
90th Percentile	1076	2247	3702
Highest Trial	1243	2516	4225

* 0 to 20+ year-old horses

In 11 years and 100 trials, the lowest number 0 to 20+ year-old horses ever obtained was 851 and the highest was 4225. In half the trials, the minimum population size in 11 years was less than 944 and the maximum was less than 3159. The average population size across 11 years ranged from 1663 to 2516.

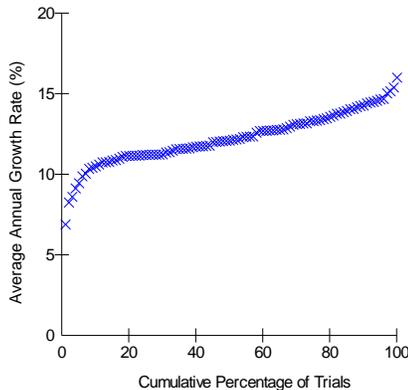
0 to 20+ year-old horses



Totals in 11 Years*

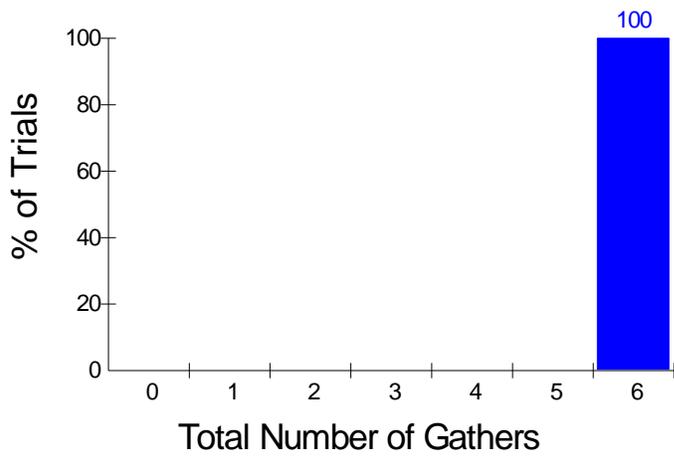
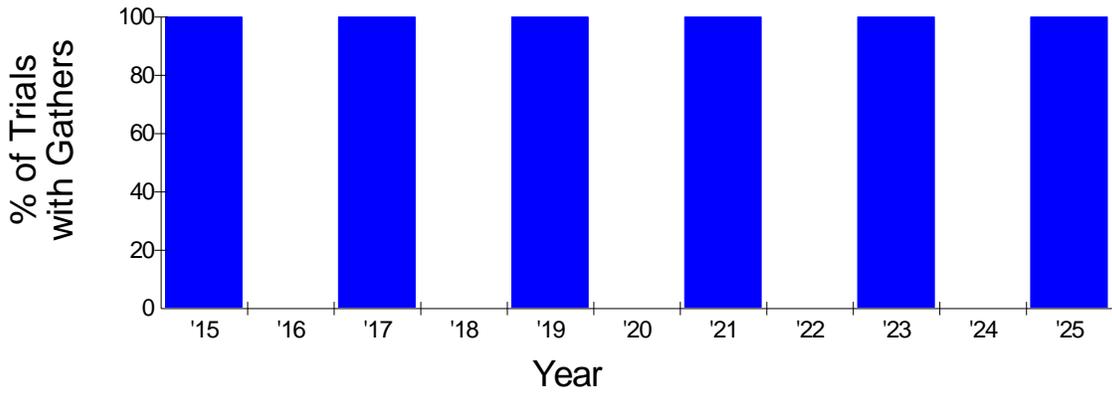
	Gathered	Removed	Treated
Lowest Trial	6043	0	2915
10th Percentile	7366	0	3410
25th Percentile	7900	0	3650
Median Trial	8332	0	3822
75th Percentile	8929	0	4061
90th Percentile	9861	0	4544
Highest Trial	11086	0	4982

* 0 to 20+ year-old horses



Average Growth Rate in 10 Years

Lowest Trial	6.9
10th Percentile	10.6
25th Percentile	11.2
Median Trial	12.1
75th Percentile	13.3
90th Percentile	14.4
Highest Trial	16.0



Appendix 7. Population Inventory



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Color Country Field Office
Cedar City Field Office

176 East DL Sargent Drive
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March 28, 2013

MEMORANDUM

To: Wild Horse Files (UT-448)
From: Chad Hunter (CCFO Wild Horse/Range Mgt. Specialist)
Subject: Wild Horse helicopter inventory of the Sulphur HMA

This memorandum outlines the findings of a helicopter population inventory of wild horses on the Sulphur wild horse Herd Management Area (HMA). The flight was done on **March 5th and 12th-14th, 2013**.

Methodology & Operations

The Mark-Resight method was used to inventory the HMA. This method is outlined on pages 32 and 33 in the Wild Horse Aerial Survey Training Manual used at the August 2-4, 2011 training in Reno, NV.

A Hughes MD500 helicopter from Sky-Hawk helicopters in Hurricane, Utah was used. Robin Venuti was the pilot while Chad Hunter, Adam Stephens, and Dan Fletcher acted as BLM helicopter crew members. Chad Hunter acted as flight manager and Ruben Griego of the Forest Service acted as helicopter manager. Chad flew each day while Dan flew on March 12th and Adam flew March 5th, 13th and 14th. Nine transects starting at the refueling area near the central east part of the HMA were flown over the HMA taking approximately 1 ½ to 2 hours for each one. The transects began by flying southwest from the fueling point along the transect, then following the transect around until returning back to the Refueling sight. Transects are approximately 1 mile apart when all are completed. Chad recorded each band of horses by taking photo graphs and calling out band size, photo numbers, side of aircraft where the horses were first seen, if they were standing or moving when first seen and distance from aircraft when first seen. Dan and Adam took GPS points with a Trimble GeoXM and recorded the information called out by Chad. The flight path that was followed for each transect was uploaded into Ag-nav, which also recorded the actual flight path.

Data was Reconcile after each days flight, but the data was entered into the spreadsheet between March 19 and April 10, 2013 as photos were reviewed. Horses were identified as individuals or as a band by their color, leg markings, face markings, and finally area/time recorded.

The helicopter manager completed the safety plan, card checks, arranged flight following, OAS-23, OAS-91, and other helicopter checks and paperwork. Color Country Dispatch coordinated the use of air space in the Sevier MOA that occurs east and northeast of the Sulphur HMA. Although the flights only touch the west boundary of the MOA we still contact the military to let them know we have a helicopter in the area. The flight on the 5th originated at BLM's Air Tanker Base at the Cedar City, Utah airport. The rest of the flights originated at the Milford Airport. Ruben Griego and Brian Brazzeal reviewed the cards for the helicopter and pilot. A safety briefing was given and flight plans for the day was reviewed. Robin Venuti was the pilot while Chad Hunter, Adam Stephens, and Dan Fletcher acted as BLM helicopter crew members.

Operational Cost

A mobile Skyhawk fuel truck provided fuel for the inventory. It took a total of 17 hours to complete the population inventory. The costs are outlined below in table 1.

Table 1 Operational Cost

Item	Unit	Cost	
BLM Travel	0 Days/per person	0	
BLM Salary	4 Persons for 10 hours a day	\$4,800.00	
Other Operational Costs			
Aviation Contract Cost			
HA/HMA/WHBT	Flight Hours	Rate per hour	Cost
Sulphur HMA	15.5	\$890	\$13,795.00
Aviation Ferry Costs	1.4	\$890	\$1,246.00
Total Air Flight Costs			\$15,041.00
Fuel Truck Mileage Cost			\$1,753.14
AG Nav/Extended/misc			\$1,339.00
Contractor Per Diem Cost			0
Total Population Inventory Cost			\$22,933.14

Weather

Weather conditions were sunny each day with temperatures in the low 40's to the high 60's. On March 5th, 2013 only one transect was flown due to winds increasing to 20 plus miles per hour. The weather then delayed additional flights until March 12, 2013. The remaining 8 transects were flown on March 12th-14th, 2013 with winds under 5 mph. The mountains had snow cover at high elevations on North facing slopes with South facing slopes clear. Low elevations were clear of snow.

Herd Health & Habitat

Most horses were in Henneke Body Class 4 (Moderately Thin), which is normal for this time of year. There were approximately 35 of the 593 horses were in body class 2 (Very Thin) and 3 (Thin). These poorer horses were spread throughout the HMA and it is believed most were older horses. The HMA looked to have moderate to heavy use throughout based on trails and forage that could be seen from the helicopter.

Population Inventory Results

A total of 593 horses were identified by photos that were taken during the inventory. Horses were identified as individuals or as a band by their color, leg markings, face markings, and finally area/time recorded. Approximately 70 hours was spent comparing photos and identifying individual horses and bands. Of the 593 horses identified as individuals 29 may have been recorded as separate groups based on location being the main identifying factor. All other horses were positively identified by color, leg markings, and/or face markings.

There were 92 yearling identified during the inventory. Of those 5 were estimated to be between 6-8 months old, which means they were born sometime between June and September last year. This is outside the normal foaling season for this area.

There were 20 young foals counted were born in January, February and early March. This is also outside the normal foaling season for the HMA. The main foaling season was just beginning at the time of the inventory and so the majority of this year's foaling was yet to occur.

The total number of horses identified in the Sulphur HMA from the photos taken during the inventory is 593 (including 92 horses that were yearlings and 20 foals) were counted in 123 bands.

Based on the total number of horses identified minus the 20 foals and 92 yearlings then divided the yearlings by that number shows last year's population increase was **19%**.

$$593(a) - (92(y) + 20(f)) = 481(b)$$

$$92(y) \div 481(b) \times 100 = 19\%$$

Key points to note with 2013 Census.

- Population Increase this year was 19% compared to the normal 20% increase.
- It is believed some domestic horses have been released into the HMAs.

/Chad Hunter

Attachments

1. Map of Fight Path
2. Map of Band Locations
3. Data Spreadsheet
4. GIS Report

Appendix 8. Comments and Responses

PRELIMINARY