

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

**Preliminary Environmental Assessment  
DOI-BLM-NV-EA B010-2010-0087-EA**

**Callaghan & New Pass/Ravenswood Complex  
Wild Horse Gather Plan**

**Fertility Control with Limited Removal**



U.S. Department of the Interior  
Bureau of Land Management  
Battle Mountain District  
Mount Lewis Field Office  
50 Bastian Road, Battle Mountain NV 89820



## TABLE OF CONTENTS

1. Introduction	3
1.1. Background	3
1.2. Purpose of and Need for the Proposed Action	5
Wild horses run through the snow in the Callaghan HMA prior to the December 2008 gather.	5
1.3. Land Use Plan Conformance	5
1.4. Relationship to Statutes, Regulations, Policy, Plans or Other Environmental Analysis	5
1.5. Conformance with Rangeland Health Standards and Guidelines	6
1.6. Decision to be Made	6
1.7. Scoping and Identification of Issues	6
2.0. Proposed Action and Alternatives	7
2.1. Introduction	7
2.2. Description of Alternatives Considered in Detail	7
2.3. Summary Comparison of Alternatives	10
2.4. Alternatives Considered but Eliminated from Detailed Analysis	10
3. Affected Environment and Environmental Consequences	11
3.1. General Description of the Affected Environment	12
3.2. Wild Horses	12
3.3. Livestock Management	33
3.4. Noxious Weeds, Invasive and Non-Native species	37
3.5. Rangeland Vegetation Resources (Forest and Rangeland)	37
3.6. Riparian-Wetland Resources and Water Quality	41
3.7. Soils	45
3.8. Threatened & Endangered Species, Special Status Species, Migratory Birds and Wildlife	46
3.9. Health and Safety	48
3.10. Wild Horse Gather Mitigation Measures	49
4. Cumulative Effects Analysis	50
4.1. Past and Present Actions	50
4.2. Reasonably Foreseeable Future Actions	51
4.3. Cumulative Impacts Summary	52
5.0. Monitoring and Mitigation Measures	54
6.0. List of Preparers	54
7.0. Consultation and Coordination	54
8.0. Public Involvement	54
Callaghan HMA gather, January 2009.	55
9.0. List of References	56
Appendix A: Wild Horse and Burro Gather Plan and Standard Operating Procedures	57
Appendix B: Herd Management Area Background Information	71
Appendix C: Standard Operating Procedures for Population-level Fertility Control Treatments	90
Appendix D: Summary of Population Modeling	92

*Photos on cover clockwise from upper left: Riparian area within the New Pass/Ravenswood HMA, August 2010, wild horses released back to the Rocky Hills HMA January 2009, morning sky, Callaghan HMA December 2008, wild horses running in the Bald Mountain HMA, September 2009, lone wild horses in the Callaghan HMA August 2010.*

# 1. Introduction

The Bureau of Land Management (BLM) is proposing to gather 866 wild horses and remove 221 excess wild horses from the Callaghan Complex and New Pass Ravenswood Herd Management Area (HMA) beginning in about December 2010. Approximately 645 wild horses would be released back to the range following the gather. Of these, about 323 mares would be vaccinated with PZP-22 (Porcine Zona Pellucida) fertility control vaccine to slow population growth, maintain population size within the Appropriate Management Levels (AMLs), and extend the time before another gather to remove excess wild horses would be needed.

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

## 1.1. Background

The Callaghan Complex consists of the Callaghan, Bald Mountain and Rocky Hills HMAs, and is located in Lander County, about 55 miles south of Battle Mountain, Nevada and 45 miles northwest of Eureka, Nevada. See Map 1. The New Pass/Ravenswood HMA is located several miles west of the Callaghan HMA, also within Lander County, and several miles northwest of Austin, Nevada. A portion of the New Pass/Ravenswood HMA is located within Churchill County within the administrative boundaries of the Carson City District Office (CCDO). The Battle Mountain District Office (BMDO) currently maintains the administration of the entire HMA. The Appropriate Management Levels (AMLs) for wild horses within these HMAs is displayed in the following table.

**Table 1: HMA Acreage and AML**

HMA	Acres	AML
Callaghan	156,157	137-243
Bald Mountain	139,878	129-215
Rocky Hills	83,994	86-143
New Pass/Ravenswood	285,800	545-566
<b>Total</b>	<b>640,148</b>	<b>894-1,161</b>

The AMLs were established following an in-depth analysis of habitat suitability and resource monitoring and population inventory data, with public involvement. 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. The BLM's current guidance is to establish AMLs as a range; however the AML for the BMDO portion of the New Pass/Ravenswood HMA was established prior to this guidance and was set as a single number, which represents the upper limit of AML. The CCDO portion of the AML was established as a range (69-90 animals) thus resulting in the above identified AML range for the whole AML.

The BLM prepared EAs to analyze the potential impacts associated with the previous gathers which were completed in November 2007 (New Pass/Ravenswood) and December 2008/January 2009 (Callaghan Complex); this analysis is incorporated by reference. These EAs are available on the Mount

Lewis Field Office web-site located at this address. [http://www.blm.gov/nv/st/en/fo/battle\\_mountain\\_field/blm\\_information/national\\_environmental.html](http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_information/national_environmental.html). The following EAs were completed for these previous gathers:

### **New Pass/Ravenswood HMA**

*New Pass/Ravenswood and Augusta Mountains HMAs Burned Area Wild Horse Removal Gather Plan and EA # NV062-EA07-188* (September 2007).<sup>1</sup>

This EA was completed for both the New Pass/Ravenswood and Augusta Mountains HMAs after wildfire burned within the HMAs in July 2007. The Augusta Mountains HMA is not included within this proposed gather and a future gather of this area would be analyzed within a separate document completed by the Winnemucca District Office.

The New Pass/Ravenswood HMA was last gathered in November 2007. At that time, 622 animals were captured, 464 removed and 92 mares treated with PZP-22 before being re-released back to the HMA. A total of 158 animals were re-released to the range to result in a post gather estimated population of 208-268.

A flight was conducted in September 2008 and September 2009 to monitor the population size and growth rates following the application of fertility control. Both of these were aerial population inventories using the direct count method. A total of 407 wild horses were observed in 2008, of which 20% or 79 were foals. Refer to Section 3.2 for more information. The 2009 flight represents the first year of fertility control effectiveness. During the flight, a total of 444 animals were observed with 50 or 11.2% representing foals. Percent foals observed during September inventory flights within this HMA have been 18-21% since 2005. The current estimated population based on the 2009 inventory and 2010 foals is 504 wild horses.

### **Callaghan Complex**

*The Callaghan Complex Wild Horse Gather Environmental Assessment NV062-EA08-134* (September 2008)<sup>2</sup> was completed for a gather of the above identified HMAs in December 2008 and January 2009. At the time, the gather also included capture of horses from a horse-free area of the South Shoshone HMA and from areas outside of HMA boundaries in the Simpson Park Mountains. A small number of wild horses were also removed from USFS outside of any HMA or Wild Horse Territory boundaries. A total of 1,705 wild horses were captured, 1,462 removed and 243 re-released back to the range. A total of 121 mares were treated with the fertility control vaccine PZP-22 prior to release back to the Complex. The estimated post-gather population after the gather was 343-349. Refer to Section 3.2 and Appendix B for more information about these gathers.

A post gather flight of the Callaghan Complex was completed in September 2009 to observe animal health, percent of foals and post gather population size as compared to the estimate. A direct count of 525 wild horses was observed within the three HMAs; with 16.9% of the population comprised of foals (fertility control would not have been effective until 2010). The current 2010 population is estimated to be 579 wild horses based on the 2009 inventory and the estimated 2010 foals resulting from year-one fertility control effectiveness. Refer to Section 3.2 for more information.

---

1. Hereafter referred to as the 2007 New Pass/Ravenswood EA.  
2. Hereafter referred to as the 2008 Callaghan Complex EA.

## **1.2. Purpose of and Need for the Proposed Action**

The purpose of the Proposed Action is to gather 866<sup>3</sup> wild horses, remove 221 excess wild horses, and release approximately 645 wild horses beginning in about December 2010. Of those released, approximately 323 would be mares vaccinated with PZP-22.

This action is needed to slow population growth, maintain population size within AML, and extend the time before another gather would be needed to remove excess wild horses. By maintaining population size within AML, rangeland resources would be protected from the deterioration associated with wild horse overpopulation, and a thriving natural ecological balance and multiple use relationship on public lands in the area consistent with the provisions of Section 1333(a) of the Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA) would be maintained. The action would also result in fewer wild horses being placed in short or long-term holding or the adoption and sale programs over the next 10-20 years.



*Wild horses run through the snow in the Callaghan HMA prior to the December 2008 gather.*

Comments received from the public for BLM gathers over the past few years have emphasized the desire for BLM to increase the use of fertility control in order to reduce the number of wild horses that have to be removed from the range and maintained in Long Term Holding Pastures. This proposed gather is the result of National BLM direction to increase the use of fertility control to maintain wild horses within AML with fewer necessary removals.

## **1.3. Land Use Plan Conformance**

The Proposed Action is in conformance with the Shoshone-Eureka Resource Area (SERA) Management Plan (RMP) Objectives (Shoshone-Eureka RMP Record of Decision dated 1986 and Shoshone-Eureka RMP Amendment, Record of Decision dated 1987).

### Wild Horse & Burro Management Objectives:

- 1) To manage viable herds of sound, wild horses in a wild and free roaming state.
- 2) To initially manage wild horse populations at existing numbers based on the 1982 aerial counts and determine if this level of use can be maintained.
- 3) To manage wild horses within the areas which constituted their habitat at the time of the Wild and Free-Roaming Horse and Burro Act became law in 1971.

## **1.4. Relationship to Statutes, Regulations, Policy, Plans or Other Environmental Analysis**

Refer to the 2008 Callaghan Complex EA page 5 and the 2007 New Pass/Ravenswood EA page 9 (both identified in Section 1.1 above).

---

3. The estimated gather number is based on 80% gather efficiency which would be affected by terrain, climate, cover and other factors.

### **1.5. Conformance with Rangeland Health Standards and Guidelines**

Refer to the 2008 Callaghan Complex EA page 5 and the 2007 New Pass/Ravenswood EA page 9. Maintenance of wild horse population size within AML would avoid the damage to the range that results from wild horse overpopulation.

### **1.6. Decision to be Made**

The authorized officer would determine whether to implement the proposed gather in order to vaccinate all of the released mares with fertility control vaccine in order to maintain population size within the established AML and avoid the deterioration of the range that can result from wild horse overpopulation. Approximately 221 excess wild horses, mostly weaned foals or yearlings, and any wild horses residing outside the HMA boundaries would be removed from the range to maintain a population size within the AML ranges. The authorized officer's decision would not set or adjust AML, or adjust livestock use, as these were set through previous decisions (refer to the EAs identified in Section 1.1).

### **1.7. Scoping and Identification of Issues**

Due to the lack of substantial comment to the original EAs in 2007 and 2008, scoping letters were not issued to the interested public list for this proposed gather. Comments will be received after issuance of this Preliminary EA and incorporated into the Final EA. The following issues were identified as a result of internal scoping relative to the BLM's proposed fertility control treatment of wild horses (mares) in the planning area.

1. Impacts to individual wild horses and the herd. Measurement indicators for this issue include:
  - Projected population size and annual growth rate (Win-Equus population modeling)
  - Expected impacts to individual wild horses from handling stress
  - Expected impacts to herd social structure
  - Expected effectiveness of proposed fertility control application
  - Potential effects to genetic diversity
  - Potential impacts to animal health and condition
2. Impacts to vegetation/soils, and riparian/wetland. Measurement indicators for this issue include:
  - Expected forage utilization, and changes in vegetation trend
  - Potential impacts to vegetation/soils and riparian/wetland resources
3. Impacts to wildlife, migratory birds, and special status species and their habitat. Measurement indicators for this issue include:
  - Potential for temporary displacement, trampling or disturbance
  - Potential competition for forage and water over time

Other issues of concern include the following:

#### New Pass/Ravenswood HMA:

- Concentrations of wild horses within the HMA, especially in the northern portion that burned in 1999 and 2007, which could impede rehabilitation and improvement of these areas
- Potential movement of wild horses from Clan Alpine HMA into the New Pass/Ravenswood HMA.
- Heavy trailing throughout the HMA, especially to water sources
- Riparian areas receiving impacts from concentrated use by wild horses

- Past animal condition less than optimal

#### Callaghan and Bald Mountain HMAs

- Condition of wild horse habitat due to past overpopulation of wild horses
- Uneven distribution of wild horses throughout the HMAs

#### Rocky Hills HMA

- Condition of wild horse habitat due to past overpopulation of wild horses
- Uneven distribution of wild horses throughout the HMA
- Limited water sources

## **2.0. Proposed Action and Alternatives**

### **2.1. Introduction**

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

- **Proposed Action Alternative:** Capture about 866 wild horses in order to remove 221 excess animals and apply PZP-22 fertility control vaccine to all the released mares (approximately 323 animals). Any wild horses residing outside the HMA boundaries would also be removed from the range.
- **Alternative 1:** Delay of gather. A gather to apply fertility control vaccine to mares would not occur at this time; however, future gathers to remove excess wild horses would be scheduled when the AML upper limit is exceeded and/or other resource management objectives are not being met. Wild horses would continue to reside outside the HMA boundaries.

The Proposed Action was developed to respond to the Purpose and Need. The BLM intends to return to these areas in 2-3 years to retreat mares to continue with population control activities as well as to remove excess wild horses as specified in this EA. Alternative 1 takes the place of No Action in this EA (refer to Section 2.4) as no gather would take place at this time and would be re-considered in future years (and analyzed in an appropriate NEPA document). Alternative 1 would not achieve the identified Purpose and Need. However, it is analyzed in this EA to provide a basis for comparison with the Proposed Action, and to assess the effects of not conducting a gather at this time. Alternative 1 was developed to represent status quo, or the present management of gathering HMAs on a frequency of about 5 years without implementation of population control measures.

### **2.2. Description of Alternatives Considered in Detail**

**Proposed Action Alternative:** Under the Proposed Action, about 866 wild horses would be gathered from within and outside the Callaghan Complex and New Pass Ravenswood HMA. The proposed gather would be completed in accordance with the Standard Operating Procedures (SOPs) located in Appendix A. The BLM intends to return to these areas in 2-3 years to retreat mares to continue with population control activities as well as to remove excess wild horses as specified in this EA. Approximately 221 excess wild horses, mostly weaned foals and yearlings, and any wild horses residing outside of the HMA boundaries would be removed from the range. Approximately 645 of the captured wild horses would be released; of these, about 323 would be mares treated with fertility control vaccine as follows:

- ❑ All of the release mares would be treated with a two-year Porcine Zona Pellucida (PZP-22) or similar vaccine and released back to the range. Fertility control treatment would be conducted in accordance with the approved standard operating and post-treatment monitoring procedures (SOPs, Appendix C).
- ❑ Post-gather, every effort would be made to return the released horses to the same general area from which they were gathered.
- ❑ The emphasis would be to remove primarily young animals that are weanlings or yearlings, returning all remaining wild horses to the HMAs.

The estimated gather figure is based on the ability to gather approximately 80% of the population. This figure was chosen based on the estimated gather efficiency of the previous gathers, derived from actual capture numbers and post gather inventory flights. It is possible that gather efficiency could be higher, or lower which could result in slight changes to the number of animals captured, removed and treated. The target number of animals for removal represents only 19.5% of the current estimated population. The objective for this proposed gather is to remove primarily weanlings and some yearlings and all animals residing outside of HMA boundaries; regardless of age. Younger animals removed from the range would be healthy and highly adoptable and would not be shipped to Long Term Holding Pastures (LTHPs). If necessary to meet gather objectives all ages of wild horses could be removed, but would be limited to mostly young animals less than 3 years of age, if possible. It is estimated that few animals would be removed that would need to be maintained in LTHPs. The proposed gather would not include any US Forest Service managed lands, as it is estimated that less than 6 wild horses exist on the USFS outside of the Callaghan HMA boundaries.

The gather would begin in about December 2010 and take about 4 weeks to complete. Several factors such as animal condition, herd health, weather conditions, or other considerations could result in adjustments in the schedule. Gather operations would be conducted in accordance with the Standard Operating Procedures (SOPs) (Appendix A).

The primary gather (capture) method would be the helicopter drive method with occasional helicopter assisted roping (from horseback). Gather corral sites and temporary holding facilities would be located in previously used sites or other disturbed areas whenever possible. Undisturbed areas identified as potential trap sites or holding facilities would be inventoried for cultural resources. If cultural resources are encountered, these locations would not be utilized unless they could be modified to avoid any impacts.

An Animal and Plant Inspection Service (APHIS) or other veterinarian may be on-site during the gather, as needed, to examine animals and make recommendations to the BLM for care and treatment of wild horses. All excess wild horses removed from within and outside the HMAs would be made available for adoption or sale to qualified individuals. Any old, sick or lame horses unable to maintain an acceptable body condition (greater than or equal to a Henneke<sup>4</sup> body condition score (BCS) 3) or with serious physical defects such as club feet, severe limb deformities, or sway back would be humanely euthanized as an act of mercy. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Washington Office Instruction Memorandum 2009-041). Refer to: [http://www.blm.gov/wo/st/en/info/regulations/Instruction\\_Memos\\_and\\_Bulletins/national\\_instruction/2009/IM\\_2009-041.html](http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-041.html)

---

4. Refer to the Henneke body condition score chart at the end of Appendix A.

Terrain throughout the proposed gather area is variable. Wild horses would typically be trailed approximately 4-7 miles to gather corrals. Some groups of horses could be herded 10 miles or more at the discretion of the BLM staff on site at the gather. Most horses would be located throughout foothills and other rolling terrain, and some animals could be trailed from within drainages or higher elevation areas. The pilot uses the helicopter to direct the wild horses towards the capture location, then stays back away from them (1/4 mile or farther), allowing them to travel at their own pace – usually a trot or light gallop. Only if the wild horses begin to deviate from the desired path, does the pilot redirect them with the helicopter.

When the wild horses approach the gather corrals, the pilot moves the helicopter closer to the animals to apply additional pressure to make sure that the group does not scatter before entering the wings of the capture corrals, to avoid the need to regroup or rope the animals by horseback, which would add additional stresses to the animals and increase risk of injury. Contrary to the view of some members of the public, wild horses and burros are not “driven” or “stampeded” during the helicopter gather or upon reaching the capture corrals. Experience has proven over the last 30 years of gathers that helicopters provide an effective, safe and humane method of gathering wild horses and this is done by having helicopter bring the animals to the capture corrals slowly.

The pilot allows the wild horses to travel at their own pace. This allows the wild horses that are old, young animals are included in the group or if the animals are suffering from lack of food or water and are in a weakened state to travel safely to the gather location without much additional stress or complications<sup>5</sup>. If foals are separated from mothers, the pilot alerts crew members of the foal’s location, who will then go to the area and guide the foal to the gather location by horseback or by loading the foal into a stock trailer for transport to the gather corrals where it is reunited with its mother. BLM staff would coordinate with the contractor on a daily basis to determine animal locations in proximity to trap corrals, and to discuss terrain, animal health, gather distances and other gather logistics to ensure the safety and well-being of the animals being gathered.

Data including sex and age distribution, condition class information (using the Henneke rating system), color, size and other information may also be recorded. Genetics sampling was conducted during the most recent gathers and would not be re-sampled during this proposed gather, as the results do not indicate the need to re-assess the genetics of these herds this soon.

**Alternative 1:** Under Alternative 1, a gather would be delayed for several years and fertility control application would not be undertaken to control the size of the wild horse population within the established AML range at this time. Gathers would be scheduled in the future depending upon National and State budget and gather priorities. It is estimated that another gather within the New Pass/Ravenswood HMA would not be scheduled before fall of 2012, and within the Callaghan Complex before fall of 2013. The current populations would be allowed to increase until the next gather occurred to remove excess wild horses.

---

5. Animal health issues relating to lack of forage or water are not expected during the proposed gather, as the population is currently near the upper limit of AML due to the gathers conducted in 2007 and 2008/2009.

### 2.3. Summary Comparison of Alternatives

**Table 2. Comparison of Alternatives**

Alternative	HMA	2010 Estimated Population	2010 Est. Gather Numbers <sup>6</sup>	2010 Removal Numbers	2010 Post Gather Population <sup>7</sup>	2010 Fertility Control (mares)
Proposed Action	Callaghan	264	211	54	210	79
	Bald Mountain	150	120	34	116	43
	Rocky Hills	165	132	33	132	49
	New Pass/Ravenswood	504	403	100	404	152
	<b>Total</b>	<b>1,083</b>	<b>866</b>	<b>221</b>	<b>862</b>	<b>323</b>
Alternative 1	Callaghan	264	0	0	264	0
	Bald Mountain	150	0	0	150	0
	Rocky Hills	165	0	0	165	0
	New Pass/Ravenswood	504	0	0	504	0
	<b>Total</b>	<b>1,083</b>	<b>0</b>	<b>0</b>	<b>1,083</b>	<b>0</b>
<b>AML: 894-1,161</b>						

### 2.4. Alternatives Considered but Eliminated from Detailed Analysis

Numerous alternatives were considered but eliminated from detailed analysis within the 2008 Callaghan Complex and the 2007 New Pass/Ravenswood Gather EAs identified in Section 1.1. Please refer to those documents for more information. Through issuance of Gather EAs by the BMDO, most comments received have focused on those already addressed in these documents. Additional Alternatives not included in those documents are discussed below.

#### *Alternative capture techniques instead of helicopter capture of excess wild horses*

Within Nevada, scoping and issuance of Gather Plan EAs for wild horse and burro gathers has resulted in comments from the public requesting that the BLM capture animals through alternative methods. The following is a summary of some of those methods with information about their use.

- Net gunning techniques normally used to capture big game animals also rely on helicopters. These methods can be safe and effective on a small scale with optimum ground conditions and access. The use of this method is not practical on a large scale and can result in additional injury to animals, humans and environmental impacts due to the need for cross country off-road travel to access netted animals.
- Chemical immobilization is a very specialized technique and strictly regulated. Currently the BLM does not have sufficient expertise to implement this method and it would be impractical to use given the size of the HMAs, 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 number of horses to gather, the large geographic size of the HMAs, and approachability of the animals this technique would be ineffective and impractical. Wild horses often outrun and outlast domestic horses carrying riders. Helicopter assisted roping is typically only used if necessary and when the wild horses are in close proximity to the gather site.

6 . Gather target based on the ability to gather 80% of the population. The gather efficiency will depend upon weather and site specific conditions of the gather and could be greater or less than the estimate.

7. The post gather population equals the estimated 20% un-captured wild horses plus the wild horses released.

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

### ***No Action Alternative***

A detailed No Action Alternative was analyzed within the previous EAs completed for these HMAs (identified in Section 1.1). Additionally, Alternative 1 is similar to a No Action Alternative in that a gather would not occur at this time, and would be scheduled in future years depending upon National and Nevada gather priorities. A “true” No Action Alternative that reflects a situation where a gather *never* occurs was previously analyzed and would be analyzed again in future gather planning documents. For these reasons it is not analyzed in detail in this document. Refer to Appendix D, Population Modeling Summary which includes some information pertaining to a true No Action Alternative.

## **3. Affected Environment and Environmental Consequences**

This section of the EA briefly discusses the relevant components of the human environment which would be either affected or potentially affected by the Proposed Action or Alternative 1. Direct impacts are those that result from the management actions while indirect impacts are those that exist once the management action has occurred.

In preparing this environmental analysis, the elements of the human environment subject to requirements in statute, regulation, or executive order (critical elements) which were considered in preparing the 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs, identified in Section 1.1 were reviewed. No change to the critical elements of the human environment was identified, which the exception of a Health and Safety Section. Critical elements present and potentially affected by the Proposed Action and/or Alternative 1 and discussed below include:

Cultural <sup>8</sup>	Threatened or Endangered Plant and Animal Species
Riparian-Wetland Zones and Water Quality	Noxious weeds, Invasive & Non-Native Species
Migratory Birds	

In addition to the critical elements, the following resources may be affected by the Proposed Action and/or Alternative 1:

Livestock	Special Status Species (plants and animals)
Rangeland Vegetation Resources	Wild Horses and Burros
Soils	Wildlife
Health and Safety	

The 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs described the Affected Environment and Environmental Consequences of a wild horse gather of these areas in detail. These documents have been reviewed and determined to be current and completely applicable to the proposed

---

8. Through adherence of the Standard Operating Procedures (SOPs) (Appendix A), potential impacts to cultural sites would be eliminated. Archeological clearance of gather corrals, holding corrals and others areas of potential effects would occur prior to construction. If cultural resources should be encountered, those locations would not be utilized unless impacts could be avoided.

gather. Please refer to those documents for more detail. The following sections describe the existing situation (affected environment) relative to these resources. Only pertinent and current information is included within the sections below.

### **3.1. General Description of the Affected Environment**

The New Pass/Ravenswood HMA is located 35 miles northwest of Austin, Nevada in Lander and Churchill Counties. The HMA encompasses 285,800 acres, is 18 miles wide and 24 miles long, and consists of north-south trending mountain ranges surrounded by valley bottoms. The New Pass Range provides the western boundary of the HMA, with the Ravenswood Mountains in the eastern portion of the HMA. Antelope Valley is located between these ranges. A small portion of the HMA exists within public lands administered by the Carson City District. The remainder is located on public lands administered by the Mount Lewis Field Office (MLFO).

The Callaghan HMA is located northeast of the town of Austin, Nevada and encompasses over 156,230 acres of public land. The HMA is approximately 27 miles long and 16 miles wide. The entire Callaghan HMA lies in Lander County at the north end of the Toiyabe Mountain Range.

The Bald Mountain HMA is approximately 139,879 acres in size, and covers an area that is 15 miles wide and 22 miles long. The southern boundary of the Carico Lake Allotment serves as the southern boundary of the HMA, which borders the Callaghan HMA to the south. The HMA is also in close proximity to the Rocky Hills HMA to the east, and South Shoshone HMA to the west.



*Callaghan HMA, September 2009.*

The Rocky Hills Herd Management Area is located 54 miles southwest of Elko, Nevada in Eureka County, and encompasses 84,315 acres. The HMA is 15 miles wide, and 13 miles long and includes the Rocky Hills, and the northern portion of the Simpson Park Mountain Range. This HMA is in close proximity to the Bald Mountain, Callaghan, and Roberts Mountain HMAs, and mixing among the herds is likely.

The proposed gather area is located within Central Nevada within the Great Basin.

Elevations range between 5,400 feet in the Valleys to over 10,000 at the top of Mount Callaghan. Much of the rangeland at lower elevations consists of salt desert shrub and Wyoming big sagebrush communities. Pinyon and Juniper are prevalent in the mid and upper elevations. Precipitation averages 6-10 inches per year in the valleys and up to 16+ inches in the mountains. Drought conditions may occur 1 out of every 3-4 years. Refer to the documents referenced in Section 1.1 for more information and Map 1 which displays the HMAs.

### **3.2. Wild Horses**

#### ***Affected Environment***

Detailed information about the history and the wild horses within the affected HMAs is provided in the EAs completed for the most recent gathers, identified in Section 1.1. Refer also to expanded detail in Appendix B. The following table summarizes the AML, current population, and estimated removal numbers for the affected HMA under the Proposed Action.

**Table 3: Summary of Wild Horse Population Information**

HMA	Acres	AML Range	Current Population <sup>9</sup>
Callaghan	156,230	134-237	264
Bald Mountain	139,879	129-215	150
Rocky Hills	84,315	86-143	165
New Pass/Ravenswood	285,800	545-566 <sup>10</sup>	504
Total	663,224	894-1,161	1,083

**Callaghan Complex**

Between December 12, 2008 and January 22, 2009 a total of 1,705 wild horses were gathered from the Callaghan Complex<sup>11</sup>, 1,462 removed, and 243 released back to the range. Of these, 121 mares were treated with fertility control (Porcine Zona Pellucida, PZP-22) vaccine and freeze-marked for future identification. The estimated post gather population within the Complex was 343-349 wild horses. The following table displays the gather, removal, treatment, release and post gather estimates for the gather.

**Table 4: Callaghan Complex Gather Results, 2008/2009**

Callaghan Complex Gather Results	Callaghan	Bald Mountain	Rocky Hills	Total <sup>11</sup>
Total captured	905	609	145	1,659
Released back to HMA	80	98	65	243
Estimated Un-captured	48-54	31	21	100-106
Treated with Fertility Control	40	49	32	121
Est. Post-Gather	128-134	129	86	343-349
Euthanized/died natural/non-gather	5	3	3	11
Euthanized/died gather related	0	8	0	8

The current estimated population of wild horses in the Callaghan Complex is 579, based on a direct count during an aerial population inventory completed in September, 2009 and includes the addition of the estimated 2010 foals. A post gather aerial inventory of the Complex was completed in September 2009. The estimated 2009 population and the direct count observations are shown in the table below:

**Table 5: 2009 Callaghan Complex Inventory**

HMA	2009 estimated population	2009 Inventory Direct Count (Adult/Foals=Total)	Difference in Adults from gather	% foals
Callaghan	157	202/36=238	+68	15.1%
Bald Mountain	152	111/27=138	-18	19.6%
Rocky Hills	101	123/26=149	+37	17.4%
Total	410	436/89=525	+87	16.9%

9. The current population is estimated from the most recent inventory September 2009, and estimated 2010 rates of increase of 12% for New Pass/Ravenswood and 11% for the Callaghan Complex. These rates were estimated conservatively based on the number of foals observed during the first and second year of fertility control effectiveness and the number of treated animals in the population.

10. The Gilbert Creek and Manhattan Mountain Allotment (Mount Lewis Field Office) portions of the HMA have a single AML, which represents the upper level of AML. An official range has yet to be established for this HMA.

11. The 2008/2009 gather also included a horse free portion of the South Shoshone HMA, USFS and a non-HMA area known as the Simpson Park Mountains, in addition to the HMAs identified as the Callaghan Complex. These additional areas are not included in this currently proposed gather of the Complex.

The 2009 inventory data indicates that across the Complex, at least 87 additional adults were present that were not captured during the 2008/2009 gather. The lower numbers in the Bald Mountain HMA could be due to several factors including movement into the Callaghan HMA or wild horses that were not observed due to the visibility factors within the HMA (trees, terrain etc). Based on this analysis, the Rocky Hills and Bald Mountain HMA gather efficiency percentage was 71% and 95%, respectively. The fertility control administered during the 2008/2009 gather will be effective in 2010, reducing the number of foals born in 2010. Based on previous application of fertility control in other areas, the 2010 population increase is estimated to be 11%.

During the 2009 inventory, animal condition on the Grass Valley side of the Callaghan HMA were noted to be in good condition, with estimated Henneke body condition scores of moderate (5). One thin horse with an estimated body score of 3.5 (thin/moderately thin) was noted. The horses appeared to be well scattered. On the Austin Allotment side of the HMA, wild horse condition was slightly less with an overall average estimated to be 4.5 (moderately thin/moderate). One young foal estimated to be 1 month of age was observed. Only 18 horses (7.6% of observed numbers) were observed outside of the boundaries of the HMA.

Most groups of wild horses within the Bald Mountain HMA were noted to be healthy and in moderate body condition. Two small groups were noted to include horses that were thin. Most wild horses were located within the HMA boundaries with 17 horses (12.3% of observed numbers) located outside of the boundaries in the north east portion of the HMA. Many trails were noted and springs appearing to be in poor condition were noted which would have been residual from the overpopulation of wild horses prior to the gather. At the time, the animals were fairly well scattered within the HMA with some concentration in the southern portion near the boundary with the Callaghan HMA. It was also noted during the flight that it would have been very easy to miss groups of 4-5 horses within the trees in portions of this HMA.

Within the Rocky Hills HMA, wild horses are continuing to concentrate use in the north-east portion of the HMA near Cadet Trough Spring. Approximately 80 percent of the animals were located here, and one large group of nearly 80 animals was observed. All animals appeared to be in good body condition, averaging moderate condition.

The following table displays the estimated actual use for wild horses (in AUMs) based on the 2009 aerial inventory that was completed for the Callaghan Complex. The figures pertain only to adult animals.

**Actual Use (AUMs) – Callaghan Complex**

HMA	2009 Actual use	2010 Actual Use
Callaghan	2,424	2,856
Bald Mountain	1,332	1,656
Rocky Hills	1,476	1,788
<b>Total</b>	<b>5,232</b>	<b>6,300</b>

Flights are planned for November 2010 for both the Callaghan Complex and the New Pass/Ravenswood HMA to document current presence of foals in the populations and distribution of animals throughout the HMAs.

Vegetation monitoring within the HMAs since the gather has indicated that slight improvement is occurring, with increased observation of key perennial grass plants and seedlings, reduced trampling and overall reduced appearance of heavy density of wild horses. Refer to Section 3.5 for more information.

### **New Pass/Ravenswood HMA**

The most recent gather of the New Pass/Ravenswood HMA took place between November 3 and 14, 2007. The gather was completed as a result of wildfire that burned through the northern portion of the HMA in July 2007. The following table displays the gather results:

**Table 6: New Pass/Ravenswood HMA Gather Results, 2007**

Total captured	622
Released back to the HMA	158
Estimated Un-captured	50-110
Treated with Fertility Control	92
Est. Post-Gather	208-268
Euthanized/died natural/non-gather	9
Euthanized/died gather related	4

The current population estimate of 504 wild horses is based on the post gather estimates and two inventory flights completed in September of 2008 and 2009, with the addition of the estimated 2010 foals.

An inventory flight was conducted the following summer in 2008 to document animal location and foaling rates prior to the first year of effective fertility control. A total of 407 wild horses were observed within and outside of the HMA. Foals represented 20% or of the total population or 81 horses. With this information, the analysis of the data revealed 85 additional animals than anticipated, which would equate to approximately 68 additional adults in the population than expected from the post gather figures. These animals could have moved in from Augusta Mountain or Clan Alpine HMA, or were not captured during the 2007 gather. If the animals were not captured during the gather, the estimated gather success was 78% or less. The percent of foals observed was higher than that observed during previous flights in 2005 and 2007 which were 17 and 18% respectively.



*A gather crew member collects a hair sample for genetics analysis from a horse to be released back to the New Pass/Ravenswood HMA in November 2007.*

Another flight was conducted in September 2009 to observe the animal distribution and number of foals in the population given the first year of fertility control effectiveness and the number of un-captured animals. The total observed within and outside of the HMA was 444 with 50 of these (11.2%) represented by foals. Given the fact that there was potentially 178 or more animals un-captured (and untreated) after the 2007 gather, the lowered foaling rate is very good.

2009 was the first year that fertility control vaccine given in 2007 would have been effective. Foals were born normally in 2008 and should have been present in reduced numbers in 2009. The total proportion of foals for the 444 animals observed was 11.2% which is a marked reduction from the past two years. The number of adults observed during the 2009 flight differed by 13 animals from the total

number observed in 2008, which indicates consistency between the flights. The number of foals present in 2009 is 61% of those observed in 2008, which indicates that the fertility control is having an effect.

The most distinct habitat attribute noted during this flight was the density and frequency of trails throughout portions of the HMA. These trails were noted on the map where they appeared to be in higher frequency of higher use than expected. Areas without wild horse sign were also noted.

Many of the developed water sources observed during the 2008 and 2009 flights were dry and non-functioning, and wild horse distribution and usage patterns appear to be strongly tied to the remaining functional waters. Most waters appeared to be in poor condition (lack of vegetative cover, trampled and bare banks etc). The riparian areas were small, and water was not plentiful at many sites. Several springs were dry or nearly dry.



*Wild horses observed during an aerial inventory of the Callaghan HMA in September 2009.*

During the flights, large concentrations of wild horses were observed north of the Steiner Spring area. Concentrations in this area have been noted for many years. It is possible that many of the un-captured animals in 2007 were in this location.

Large concentrations of wild horses were also located in and near the New Pass Range in 2008 and 2009 with 125-140 wild horses observed in this location. It is possible that wild horses have moved east from Clan Alpine HMA into this area since the 2007 gather.

In 2009, most of the animals observed were in good body condition with acceptable body weight and shiny hair coats. One observation of 3 horses was noted as having ribs visible, and one single horse was noted as being thinner. One larger group of horses in the northern portion of the HMA had a young foal. The rest of the foals observed were average size and were likely born in the early spring months.

In 2007 most wild horses residing outside of the HMA were removed. During the flight in 2008, nine horses (2.2%) were observed outside of HMA boundaries. In 2009, 24 horses (5.4%) were observed outside of HMA boundaries.

The following table displays the actual use (in AUMs) for the New Pass/Ravenswood HMA based on aerial inventory flights in 2008 and 2009 and includes only adult animals.

**Actual Use (AUMs) New Pass/Ravenswood HMA**

Year	Actual Use
2008	3,912
2009	4,728
2010	5,328
Total	13,968

Refer to Appendix B for more information about the most recent gathers, anticipated age structures, and photos from the recent gathers and inventory flights. In general, the condition of the animals noted

during the inventory flights is markedly improved from the condition observed during the previous gathers. In 2007, many of the horses gathered from the northern portion of the New Pass/Ravenswood HMA (especially mares) were on the lower end of condition class 4 (moderately thin). Animals gathered from the southern portion were in much better body condition.

Wild horses gathered from Callaghan HMA in 2008/2009 were not in good body condition and suffered from lack of adequate resources due to overpopulation. Throughout the gather of Callaghan and Bald Mountain HMAs, thin wild horses were captured with little reserves to carry them through the winter. These two HMAs were 5-7 times over the established AMLs, and with the area receiving less than 50% of the normal precipitation by the end of October, forage and water became very limiting for this large population. Overall, the horses captured from the Bald Mountain and Callaghan HMAs were weak and the gather pilot had to bring the animals to the trap sites very slow and easy. Rocky Hills HMA's wild horses were in good body condition (moderate or better) and there were no health concerns with this population during the gather.

Since the previous gathers, slight improvements have been noted throughout some of the uplands and some riparian areas within these HMAs. However, the habitat needs substantial improvement as many riparian areas are not functioning properly, especially those that endure heavy use by concentrated numbers of wild horses. Additionally, key perennial grass species are lacking or present in sub-adequate amounts throughout the vegetation communities and are at risk of further decline under use by an overpopulation of wild horses. These areas have a history of wildfire that has also affected the vegetation and rangeland health including a 1,200 acre wildfire that burned in the Rocky Hills HMA in August 2010. Refer to Sections 3.5 and 3.6 for more information.

### ***Genetics Discussion***

Hair samples were collected from each of the HMAs during the previous gathers for analysis of genetics. Analysis was conducted by Dr. Gus Cothran, Department of Veterinary Integrative Bioscience, Texas A&M University. A total of 293 samples were analyzed from wild horses released back into the HMAs following the most recent gathers. All reports reflect high genetic variability, with evidence of mixing among herds. The Callaghan HMA results indicated virtually no change from the previous sampling in 2002. The Bald Mountain and Callaghan HMAs were very similar which confirms that they share some degree of common history and current and past mixing is likely. The reports concluded that no action was currently needed as the current variability levels were high enough to avoid loss of variation in the future. Refer to Appendix B for more detail from the genetics reports.

Animal health is expected to be very good during the proposed gather, as these populations are currently near or within AML ranges, and in general average precipitation levels have been received in the past two years. Additionally, the New Pass/Ravenswood HMA is experiencing its 2<sup>nd</sup> year of effective fertility control, with approximately 82% of the treated mares expected to not foal in 2010. Similarly, the Callaghan Complex is currently within the 1<sup>st</sup> year of effective fertility control with up to 94% of the treated mares experiencing a reprieve from foaling.

Wild horses are a long-lived species with documented survival rates exceeding 92% for all age classes and do not have the ability to self-regulate their population size. Predation and disease have not substantially regulated wild horse population levels within the proposed gather area. Throughout the HMAs administered by the Battle Mountain District, there are few predators that exist to control wild horse or burro populations. Some mountain lion predation occurs, but it is not believed to be substantial. Coyote are not prone to prey on wild horses unless young, or extremely weak. Other predators such as wolf or bear do not exist. Wild horses in general are very resilient and adaptable animals with a metabolism that has evolved to allow them to survive and thrive in poor quality habitat (compared to their domestic counterparts). These wild animals are typically in top fitness, have strong bones and hooves and rarely succumb to ailments plagued by domestic horses. Wild horses typically do not begin to show signs of body condition decline until the habitat components are severely deficient. Once the decline begins, their health deteriorates rapidly.



*Bald Mountain HMA gather January 2009 – wild mares await release back to the HMA.*

#### ***Impacts of the Proposed Action Alternative***

Under the Proposed Action, about 866 wild horses would be captured, 221 removed, and 645 would be released back to the range. The animals to be removed would consist mainly of any wild horses residing outside the HMA, or weaned foals and yearlings, however horses from all age groups could be removed based on a management decision by the authorized officer (COR<sup>12</sup> or WH&B Specialist). These animals would be transported to a BLM short-term corral facility where they would receive appropriate care, and be prepared for adoption, sale (with limitations) or long-term holding pastures (LTHPs). Only older animals would be offered for sale or transported to LTHPs and it is estimated that these would be very minimal. Any old, sick or lame horses that would be unable to maintain an acceptable body condition (greater than or equal to a Henneke BCS 3) would be humanely euthanized as an act of mercy.

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

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

---

12. COR=Contracting Officer's Representative. Usually the Wild Horse and Burro Specialist responsible for that area and is present on the gather to administer the gather contract by directing the contractor, documenting activities etc.

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Normal	94%	82%	68%

Under the Proposed Action, these mares could be treated again in 2-3 years and thereafter every 2-3 years which could have the following efficacy for a two year protocol (which was used for the population modeling):

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
Normal	94%	82%	94%	82%	94%

One-time application at the capture site would not affect normal development of the fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997).

The New Pass Ravenswood HMA mares were treated for fertility control in November 2007. They foaled normally in 2008 with 20% foals observed in the population. 2009 (year 2) foaling rates fell to 11.2%. In 2010 (year 3), foaling rates should have risen slightly to an estimated 13-15%. 2011 would represent year 4 of the initial fertility control treatment and year 1 for the current proposed fertility treatment. Some slight effects from the original fertility control treatment should be evident in the population through foaling rates slightly less than normal. The current proposed fertility control treatment would then become fully effective in 2012 (year 2).

The treated mares released to the Callaghan Complex following the gather in December 2008/January 2009 are currently within the first year of fertility control effectiveness (year 2). 2011 would represent year 3 of the initial fertility control treatment and year 1 of the current proposed treatment. Foal presence should approximate 11% or less for this Complex in 2010 and 13-15% in 2011 per the initial fertility control treatment administered in 2008/2009. The current proposed fertility control treatment would become effective in 2012 (year 2). Refer to discussion about the population modeling below and in Appendix D for more detail.

The treatment would be controlled, handled, and administered by a trained BLM employee. Mares receiving the vaccine would experience slightly increased stress levels associated with handling while being vaccinated and freeze-marked. Serious injection site reactions associated with fertility control treatments are rare in treated mares. Any direct impacts associated with fertility control, such as swelling or local reactions at the injection site, would be minor in nature and of short duration. Most mares recover quickly once released back to the HMA, and none are expected to have long term impact from the fertility control injections. Mares treated and released during the previous gathers were freeze-marked on the left hip with two 4 inch letters for future identification. These identifiers would be recorded along with age and health of the mare for future analysis. Additional letters could be added for future tracking purposes. Newly captured mares that are not marked would be marked with new freeze-mark letters. This information would also be used to determine the number of mares captured that were not previously treated and provide additional insight to gather efficiency.

### Direct and Indirect Gather Impacts

The purpose of this section is to provide relevant information to the proposed gather and summarize the potential direct and indirect effects to wild horses that could occur with implementation of the Proposed Action, or the No Action Alternative. Under the Proposed Action, impacts to wild horses would be both direct and indirect, occurring to both individual horses and the population as a whole.

*Mare given fertility control during the 2007 New Pass/Ravenswood HMA gather and freeze-marked for identification. Photo taken during an inventory September 2008.*



The BLM has been gathering excess wild horses from public lands since 1975, and has been using helicopter for such gathers

since the late 1970's. Refer to Appendix A for information about methods that are utilized to reduce injury or stress to wild horses and burros during gathers. Since 2004, BLM Nevada has gathered over 26,000 excess animals. Of these, gather related mortality has averaged only 0.5% which is very low when handling wild animals. Another 0.6% of the animals captured were humanely euthanized due to pre-existing conditions and in accordance with BLM policy. This data affirms that the use of helicopters and motorized vehicles is a safe, humane, effective and practical means for gathering and removing excess wild horses and burros from the range. BLM policy prohibits the gathering of wild horses with a helicopter, (unless under emergency conditions), during the period of March 1 to June 30 which includes and covers the six weeks that precede and follow the peak of foaling period (mid-April to mid-May).

The BMDO has been actively conducting wild horse gathers since the mid 1970's. Over time, methods and procedures have been developed and refined so as to minimize stress and impacts to wild horses during implementation of gathers. Injury and death as a direct result of the helicopter herding is minimal. In fact, most injuries or death occur *after* the animal is gathered, e.g., when the animals are sorted or loaded for transport, or while in the holding corrals. BLM staff is on-site at all times to observe the gather, monitor animal health, and coordinate the gather activities with the contractor. The SOPs outlined in Appendix A would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impacts to or injury of the wild horses.

Over the past 35 years, various impacts to wild horses during gathers have been observed. Individual, direct impacts to these animals include handling stress associated with the capture, sorting, animal handling, and transportation. The intensity of these impacts varies by individual animal, and is indicated by behaviors ranging from nervous agitation to physical distress. Wild horses are very adaptable animals and assimilate into the environment with new members quite easily. Observations made through completion of gathers indicate that many of the wild horses captured acclimate quickly to the holding corral situation, becoming accustomed to water tanks and hay, as well as human presence. Both the BLM Wild Horse and Burro Specialists and the Gather Contractor and crew are very attentive and sensitive to the needs of foals as well as all wild horses captured during gathers, and ensuring their health, safety and well being during and after the gather is a focus and priority.

Accidental death or the need to humanely euthanize animals as a direct result of gather activities is infrequent and averages less than one half to one percent of the wild horses gathered (0.5-1.0%). Injuries sustained during gathers include nicks and scrapes to legs, face, or body from brush or tree

limbs while being herded to the gather corrals by the helicopter. Rarely, wild horses will encounter barbed wire fences and will receive wire cuts. These injuries are not fatal and are treated with medical spray at the holding corrals until a veterinarian can examine the animal.

Most injuries are sustained once the animal has been captured and is either within the gather corrals or holding corrals, or during transport between the facilities and during sorting. These injuries result from kicks and bites, or from collisions with corral panels or gates. Transport and sorting is completed as quickly and safely as possible to reduce the occurrence of fighting, and then the wild horses are moved into the large holding pens to settle in with hay and water. Injuries received during transport and sorting consist of superficial wounds of the rump, face, or legs. Occasionally, horses may sustain a spinal injury or a fractured limb which requires humane euthanasia but these injuries are rare. Similar injuries could be sustained if wild horses were captured through bait and/or water trapping, as the animals still need to be sorted, aged, transported, and otherwise handled following their capture.

On many gathers, no wild horses are injured or die. On some gathers, due to the temperament of the horses, they are not as calm and injuries are more frequent. This was the case with the gather of the Bald Mountain HMA in 2009. The temperament of these horses was much different than that of the Callaghan or Rocky Hills HMAs and despite the fact that a gather had not occurred on this HMA since 1981, the wild horses were very unruly compared to normal wild horse behavior during gathers, and numerous horses were either injured or accidentally killed during that gather. All total 8 horses from the Bald Mountain HMA were euthanized or died as a result of the gather activities as compared to no gather related deaths from the gather of the Callaghan and Rocky Hills HMAs. This represented just 0.46% of the total wild horses gathered. Euthanasia due to pre-existing factors such as blindness, deformity, prior injury, severe tooth loss or body condition was attributed to only 3 deaths each for the Bald Mountain and Rocky Hills HMAs, and 5 for the Callaghan HMA, which averaged 0.65%. Overall, average mortality for this gather averaged 1.1%, which is low considering the thin body scores and weak condition of many of the wild horses gathered.

During the 2007 New Pass/Ravenswood HMA gather, a total of 10 wild horses were euthanized due to pre-existing issues as identified above for the Callaghan Complex. Three animals died during the gather for unknown reasons, which were attributed to the gather activities for purposes of documentation. These statistics indicate 0.48% deaths possibly due to the gather activities and 1.6% euthanized due to pre-existing conditions.

Indirect individual impacts are those impacts which occur to individual animals after the initial stress event, and may include miscarriage in females, and increased social displacement and conflict in males. These impacts, like direct individual impacts, are known to occur intermittently during gather operations. An example of an indirect individual impact would be the brief skirmish which occurs amongst 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 don't break the skin.

Injuries and death may occur within the holding pens containing mares awaiting fertility control and studs awaiting release, though these incidences are rare. Oftentimes, these animals must be held for 7-10 days or longer while the gather in a given area is being completed and before they can be released. During this time, through fighting and other behaviors, injuries can occur but rarely result in death. Like direct individual impacts, the frequency of these impacts varies with the population and the individual. Observations following capture indicate the rate of miscarriage varies, but can occur in about 1 to 5% of

the captured mares, particularly if the mares are in very thin body condition or in poor health. No miscarriages were documented during the previous gathers of these HMAs despite the low body condition of mares gathered. Given the timing of this gather, which would occur in December, and the condition of the animals to be gathered, miscarriage is not considered to be an issue for the proposed gather.

Through the capture and sorting process, wild horses are examined for health, injury and other physical defects. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals that meet the criteria and should be euthanized (refer to SOPs Appendix A). Animals that are euthanized for non-gather related reasons include those with old injuries (broken hip, leg) that have caused the animal to suffer from pain or prevents them from being able to travel or maintain adequate body condition; excessive teeth wear or broken teeth, are in poor body condition, or are weak from old age; and wild horses or burros that have congenital (genetic) or serious physical defects such as club foot or sway back and should not be returned to the range.

During summer gathers, roads and corrals may become dusty, depending upon the soils and specific conditions at the gather area. The BLM ensures that contractors mitigate any potential impacts from dust by slowing speeds on dusty roads and watering down corrals and alleyways. Despite precautions, it is possible for some animals to develop complications from dust inhalation and contract dust pneumonia. This is rare, and usually affects animals that are already weak or otherwise debilitated due to old age or poor body condition.

Summer gathers pose increased risk of heat stress; however, this can occur during any gather, especially in older or weaker animals. Adherence to the SOPs as well as the techniques utilized by the gather contractor minimizes heat stress. Individual animals are monitored and veterinary or supportive care is administered as needed. Heat related issues can be mitigated by conducting gather operations during morning hours when the temperatures are cooler. Electrolytes can be administered to the drinking water during gathers that involve animals in weakened conditions or during summer gathers. Additionally, Battle Mountain District Wild Horse and Burro staff maintains supplies of electrolyte paste if needed to directly administer to an affected animal. Heat stress does not occur often, but if it does, death can result. Because the proposed gather is tentatively identified for completion in December, heat or dehydration related issues are not expected.

Wild horses are usually in very good fitness and are able to endure the physical requirements of the gather much better than their domestic counterparts. However, the environmental conditions and the overall health and well being of the animals is continually monitored through both summer and winter gathers to adjust gather operations as necessary to protect the animals from gather related health issues. For example, experience during some past gathers has shown that gathers of HMAs with wild horses that are in very good body condition (moderate, Henneke body condition score 5 or higher), sometimes have more heat or gather related issues than horses that do not have as high of a body condition score. The reasons for this are unknown, but do show that body condition is not always an indication of the animal's ability to easily handle the stresses of a wild horse gather. Due to genetics or other unknown factors, two similar HMAs could be gathered under exactly the same circumstances, with wild horses from one HMA showing more signs of heat or other gather related stresses than the other herd. For these reasons, constant monitoring and adjustment of gather operations on a daily or hourly basis is an inherent part of the gathers.

In some areas, gathering wild horses during the winter may avoid the stress that could be associated with a summer gather. By fall and winter, almost all foals are of good body size and sufficient age (6 months or older) to be easily weaned. Winter gathers are often preferred when terrain and higher elevations make it difficult to gather wild horses during the summer months. Under winter conditions, horses are often located in lower elevations due to snow cover at higher elevations. This typically makes the horses closer to the potential trap sites and reduces the potential for fatigue and stress. While deep snow can tire horses as they are moved to the trap, the helicopter pilots allow the horses to travel slowly at their own pace. Trails in the snow are often followed to make it easier for horses to travel to the trap site. On occasion, trails can be plowed in the snow to facilitate the safe and humane movement of horses to a gather site. During the 2008/2009 Callaghan Complex gather, the conditions were variable and ranged from snow storms and snow coverage up to one foot thick to areas clear of snow completely or snow melt and mud. Despite the weak condition of many of the wild horses from Callaghan and Bald Mountain HMAs, the wild horses were not further debilitated from the gather as the pilot brought horses to the gather corrals slowly and carefully, being mindful of their strength and body condition.

In some areas, a winter gather may result in less stress as the cold and snow does not affect wild horses to the degree that heat and dust might during a summer gather. Wild horses may be able to travel farther and over terrain that is more difficult during the winter, even if snow does not cover the ground. Water requirements are lower during the winter months, making distress from heat exhaustion extremely rare. By comparison, during summer gathers, wild horses may travel long distances between water and forage and become more easily dehydrated. In any case, wild horses are typically in top physical fitness and are able to endure the physical demands of a wild horse gather better than a domestic horse, regardless of breed due to the requirements of surviving in the wild.

A few foals may be orphaned during a gather. This can occur if the mare rejects the foal, the foal becomes separated from its mother and cannot be matched up following sorting, the mare dies or must be humanely euthanized during the gather, the foal is ill or weak and needs immediate care that requires removal from the mother, or the mother does not produce enough milk to support the foal. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the mother rejected it or died. These foals are usually in poor, unthrifty condition. Every effort is made to provide appropriate care to orphan foals. Veterinarians may administer electrolyte solutions or orphan foals may be fed milk replacer as needed to support their nutritional needs. Orphan foals may be placed in a foster home in order to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

A total of four orphans were found adoptive homes during the Callaghan Complex gather in 2008/2009. Three were a little too young to wean and could not be matched with their mothers, and one was a young weak filly that needed supportive care due to infection and malnourishment as the mother was moderately thin/thin and was not producing adequate milk for the filly. Refer to Callaghan photo #4 in Appendix B. One foal was placed in a foster home and later adopted during the New Pass Ravenswood Gather in 2007 because it was a little too young to wean and the mother needed to be euthanized due to very thin body condition, excessive tooth wear and no milk production for the foal.

Following the gather, a large percentage of inoculated mares would experience reductions in fertility. Recruitment of foals into the population would be reduced over a three-year period. Up to 94% of the mares treated would not foal the second year following implementation of fertility control, and 82% and 68% of mares in the following two years. The potential multi-year reprieve from foaling would greatly

increase overall health and fitness of the mares, as well as the health of the foals born after fertility returns.

Past application of fertility control has shown that mares reflect improvements to overall health and body condition even after fertility resumes. Subsequent observations of mares treated in past gathers showed that many of the mares were larger than the others were, maintained higher body condition than untreated mares, and had large healthy foals.

Following resumption of fertility, the proportion of mares that conceive and foal could be increased (rebound effect) due to the increased fitness. Additionally, fertility control treatment could cause breeding and foaling seasons to become “out of sync” with foals born earlier or later in the year, or throughout the year but is generally associated with the timing of the treatment and not the vaccine itself. Research is continuing to document and quantify these effects.



*The pinto in the lead is the mare in the background of the center photo. She was given fertility control and re-released to the HMA. Photo taken during an inventory September 2009.*



*A group of very colorful horses gathered from the Callaghan HMA in January 2009.*



*This stud is pictured in the center photo. He was adopted at an event held in Winnemucca Nevada in May, 2009.*

The indirect effect of fertility control would be to extend the time before another gather is required. However, under the proposed Capture, Treat and Release (CTR) protocol, it is being recommended that the BLM return to these areas every 2-3 years to re-apply fertility control. By reducing population growth rates the number of wild horses that would have to be removed during future gathers would also be reduced or eliminated. Future gathers would be dependent upon BLM funding, and National Wild Horse and Burro priorities. Expanding the use of fertility control to slow growth rates and reduce the number of animals removed from the range (especially to LTHPs) is included within new strategies currently being proposed by the Secretary of the Interior. Future gathers could then include these and other strategies and would be analyzed at that time.

Genetic and physical health and future reproductive success of mares within all of the involved HMAs would be sustained. Reduced growth rates and lower population sizes would also allow for improvements to range condition, which would have long-term benefits to wild horse habitat quality and contribute to the achievement and maintenance of a thriving natural ecological balance.

The primary effect of the Proposed Action would be to growth rates and numbers of wild horses needing to be gathered and/or removed over the next 10-11 years. Refer to the discussion below and Appendix D for more detail.

*Wild Horses Remaining or Released into the HMAs following Gather*

Approximately 866 wild horses would be captured from the four involved HMAs. Of these, about 645 horses ages 1-20+ would be returned to the HMA to result in a post gather population of approximately 872 wild horses. The number returned represents 80.5% of the estimated population. This is in contrast to typical gathers where up to 92% of the population must be removed to achieve the low range of AML. Approximately 217 animals would not be captured. With about 50% of these being mares, at least 109 females would not be treated with the fertility control vaccine and would continue to foal normally within the four affected HMAs.

Wild horses not captured may be temporarily disturbed and moved into another area during the gather operation. With the exception of slight changes to herd demographics from removals of mostly young animals, direct population impacts have proven to be temporary in nature with most, if not all, impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release, except for a heightened awareness of human presence.

It is not expected that genetic health would be impacted by the Proposed Action. The AML range of 894-1,161 should provide for acceptable genetic diversity. Genetics analysis reports for these herds indicate high genetic variability and recommend no action at this time. Refer to Appendix B for more information.

The primary benefit of achieving and maintaining the established AML within these HMAs would be the improvement of the health and sustainability of habitat attributes over the long-term. By maintaining wild horse population size within the AML, there would be a lower density of wild horses across the HMA, reducing competition for resources and allowing wild horses to utilize their preferred habitat. Maintaining population size within the established AML would be expected to improve forage quantity and quality and promote healthy, self-sustaining populations of wild horses in a thriving natural ecological balance and multiple use relationship on the public lands in the area.

Deterioration of the range associated with wild horse overpopulation would be avoided. Managing wild horse populations in balance with the available habitat and other multiple uses would lessen the potential for individual animals or the herd to be affected by drought, and would avoid or minimize the need for emergency gathers, which would reduce stress to the animals and increase the success of these herds over the long-term. Individuals would be able to maintain optimum body weight and overall health even in ‘bad’ years marked by poor precipitation or harsh winters. Through maintenance of AML, progress would be made towards the Standards for Rangeland Health, Allotment Specific and RMP Objectives.

***Results of WinEquus Population Modeling***

The Proposed Action and Alternative 1 were modeled using Version 3.2 of the WinEquus population model (Jenkins, 2000). The results are fully detailed in Appendix D, and summarized briefly below.

The model was used to simulate the possible outcomes of treatment and re-treatment of these HMAs on a two-year fertility control protocol, (as compared to a three year protocol) to display the potential growth rates, population sizes and gather and removal numbers in what could be the most frequent retreatment that could be possible in future gathers. It is likely that in the future, these areas could also be gathered at 3 or 4 year intervals, depending upon the National gather funding and priorities.

The Proposed Action was modeled for a cycle of 10 years, showing a re-gather and retreatment of the mares every two years (2010, 2012, 2014 etc), with removal of only foals and yearlings. Removal of other age groups or wild horses located outside of HMA boundaries was not included in the model. The outcomes produced represent averages and totals for the *full* ten years that the model was simulated. The model was set for 100 trials or simulations.

Alternative 1 was modeled to simulate current management or status quo with gathers occurring every five years to remove excess wild horses and achieve the AMLs without implementation of additional population controls. Alternative 1 was also set for 10 years and 100 trials. Please refer to the detailed data and further explanation in Appendix D.

Through completion of the proposed gather and subsequent inventory flights, the MLFO would collect data to assess the timing and needs for future gathers. Future gathers could and would likely include treatment of fertility control and be conducted every 2-3 years. Prior to completing future gathers, the MLFO would complete appropriate NEPA documents and analyze data collected since the previous gather including population growth rates, population sizes, animal health and vegetation monitoring data.

The results of the population modeling clearly show that the application of fertility control on a two-year protocol beginning in 2010 could eliminate the need to remove unadoptable wild horses in future gathers, and substantially reduce the number of excess animals that need to be removed from the range. Though many times more animals would have to be gathered during the more frequent gathers, this would be offset by being able to return most animals (80-90%) back to the range in addition to the increased animal and rangeland health that maintaining populations at AML would bring. Under this strategy, few to no older wild horses would need to be maintained in LTHPs. The following questions were addressed through the modeling:

- **Do any of the Alternatives “crash” the population?**

Results of the modeling do not indicate that implementing the Proposed Action would result in a crash of the population. Results obtained for 10 years and 100 trials for all HMAs showed minimum population levels and growth rates within reasonable levels, indicating that adverse impacts to the population are not likely.

- **What effect do the different alternatives have on the average population size?**

The results of the model indicate that the Proposed Action, with potential retreatment of fertility control every two years would maintain the populations within their respective AML ranges over the course of the next 10 years, with fewer removals necessary and removals of primarily young and adoptable animals.

Alternative 1, with no population control and gathers approximately every 5 years would not maintain the populations at AML, and could result in populations that average 120-157% of AML, while requiring the removal of many more excess wild horses than with the Proposed Action, and many more older horses that would potentially be sold (with limitation) or go to LTHPs at a substantial cost.

- **What effect does fertility control have on population growth rate?**

The results of the modeling suggest that the Proposed Action when compared to Alternative 1 could substantially reduce population growth rates to the point where growth and mortality (plus minimal removals) are even, resulting in “flat” growth rates that hover around zero (median trial) over the course of the 10 years of trials modeled. The median growth rates displayed by the model ranged from -0.7 to 2.0% for the Proposed Action, and 14.4 to 16.1% for Alternative 1 (as an average of the entire 10 years modeled). As a result, fewer excess wild horses would need to be removed from the range over the next 10 years for the Proposed Action as compared to Alternative 1.

**Table 7. Median Trial for Average Growth Rates in 11 years**

HMA	Proposed Action	Alternative 1
Callaghan	0.0	15.4
Bald Mountain	-0.7	14.4
Rocky Hills	1.6	14.7
New Pass/Ravenswood	2.0	16.1

The growth rates for the Proposed Action reflect the modeling scenario for gather and retreatment for fertility control every two years in order to show the range of potential outcomes for the most intensive fertility control treatment possible. The actual future schedule of fertility control and gathers would be determined following the analysis of inventory data collected following gathers. Gathers could be repeated every 2-3 years and may or may not include fertility control.

- **What effect do the alternatives have to numbers of horses gathered and removed?**

The modeling consistently reflects that implementation of the Proposed Action and potentially continuing the fertility control protocol every 2 years over the course of 10 years that populations would be maintained within the AML ranges. Approximately double the number of wild horses would have to be captured during gathers under the Proposed Action, which would occur more frequently. However, the key point is that only 30-35% of the number of horses would have to be removed during gathers when compared to the Alternative 1, and most of these animals would generally be younger and highly adoptable. More frequent gathers would be costly; however the additional costs would be more than offset because few if any animals would have to be maintained in LTHPs, which itself is very costly.

**Comparison of wild horses removed – Most Typical Trial**

Alternative	Total Removed - all ages	Total Removed 0-4 years of age	Total Removed 5+ years
Proposed Action	584	584	0
Alternative 1	1,850	1,361	489

Under Alternative 1, more than 300% more horses would have to be removed over the course of 10 years, with a Most Typical Trial total of 468 being 5 years of age or older. This represents 26% of the wild horses removed being transported to LTHPs, as compared to 0.0% reflected in the modeling under the Proposed Action.



*Foals gathered from New Pass/Ravenswood November 2007.*

The modeling completed for Alternative 1 and the Most Typical Trial also reflects that population sizes in 6 of the 11 years modeled would exceed the upper limits of AML which would have consequences associated with degradation to rangeland resources and potentially to health and well-being of the wild horses (particularly in times of drought or bad winters).

The following tables display the average population sizes produced and projected gather and removal numbers for each Alternative between the 10<sup>th</sup> and 90<sup>th</sup> percentile. These numbers may be interpreted as in 100 trials and 11 years, only 10 percent of the trials produced results lower than presented below, and 10 percent produced results higher than those presented below. In other words, 80 percent of the trials had results that fell within the ranges given in these tables.

**Table 8 Average Population Sizes in 11 years – 10<sup>th</sup> -90<sup>th</sup> Percentile**

HMA	Proposed Action	Alternative 1
Callaghan	213-271	261-307
Bald Mountain	165-215	215-251
Rocky Hills	118-152	141-167
New Pass/Ravenswood	400-497	576-684
Total	<b>896-1,135</b>	<b>1,193-1,409 (120-157% of AML)</b>
AML	<b>894-1,161</b>	

As shown in the above table, the modeling results show the Proposed Action scenario maintaining the population within the AML, whereas the Alternative 1 or status quo does not, and allows an average population of 120-157% of the established AMLs.

**Table 9: Horses gathered, removed and treated in 11 years – 10<sup>th</sup> -90<sup>th</sup> Percentile**

HMA	Action	Proposed Action	Alternative 1
Callaghan	Gathered	981-1216	340-584
	Removed	126-228	311-544
	Treated	358-424	0
Bald Mountain	Gathered	787-1024	253-422
	Removed	44-121	226-396
	Treated	248-370	0
Rocky Hills	Gathered	524-658	167-302
	Removed	36-119	160-287
	Treated	191-242	0

HMA	Action	Proposed Action	Alternative 1
New Pass/Ravenswood	Gathered	1799-2181	562-1090
	Removed	204-418	520-1030
	Treated	640-804	0

The primary long-term and indirect effects to the wild horses through the treatment and re-treatment of fertility control would be to the overall health and well being of the animals and continued improvement to rangeland health as AML is maintained. Many mares would not experience the biological stress of reproduction, foaling and lactation and would reflect better health as noted by higher body condition scores. Foals later born to these mares would be healthier overall, and would benefit from optimum nutrition from mares’ milk and rangeland forage.

As the population is maintained at thriving natural ecological balance, vegetation resources would continue to improve (as improvement has already been noted in many areas within these HMAs), thereby improving the forage available to wild horses throughout the HMAs. With balance and optimum distribution across the HMAs there would also be less trailing and concentrated use of waters which would have many benefits to the wild horses. There would be reduced competition among bands using the waters, and less fighting would occur among studs and individual animals accessing these waters. Water quality and quantity would continue to improve to the benefit of all rangeland users including wild horses. Wild horses would also have to trail less distances back and forth to water and desirable foraging areas.

Should the repeated fertility control treatment be continued into the future, the chronic cycle of over population and large gathers and removals would no longer occur, but instead a persistent cycle of balance and stability resulting in continued improvement of overall habitat conditions and animal health.

The modeling discussion above indicates that over the course of 10 years, the implementation of the Proposed Action could result in 1,266 *fewer* excess wild horses which would require removal from the range. For every excess horse not adopted or sold, a savings to the American taxpayer of up to \$12,000 per animal over 20 years would accrue. Over the next 20 years, this could equate to savings of over 15 million dollars.

Temporary Holding Facilities During Gathers

Wild horses gathered would be transported from the gather corrals (trap sites) to a temporary holding corral within the HMAs in goose-neck trailers. At the temporary holding corrals wild horses would be sorted into different pens based on sex. The horses would be aged and fed good quality hay and water. Mares and any un-weaned foals would be kept in pens together. Wild horses identified for retention in the HMAs and for fertility control treatment would be maintained in these temporary corrals until the fertility control treatment could be implemented and would then be returned to the HMAs (refer to the photo below).

At the temporary holding facility, recommendations regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses is provided by a veterinarian, BLM staff or contractor. 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).



*Callaghan mares await re-release back to the HMA. Callaghan HMA gather January 2009.*

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

Approximately 221 excess wild horses consisting primarily of all wild horses residing outside of HMA boundaries along with weanlings and yearlings would be removed, though wild horses of any age could be identified as excess by the authorized officer and removed. Animals would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s). From there, they would be made available for adoption or sale to qualified individuals or to long-term holding pastures.

Wild horses selected for removal from the range are transported to the receiving short-term holding facility in straight deck semi-trailers or goose-neck stock trailers. Vehicles are inspected by the BLM COR or Project Inspector (PI) prior to use to ensure wild horses can be safely transported and that the interior of the vehicle is in a sanitary condition. Wild horses are segregated by age and sex and loaded into separate compartments. Weanlings and yearlings may be shipped in mixed compartments of both colts and fillies. Transportation of recently captured wild horses is limited to approximately 8 hours. During transport, potential impacts to individual animals can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to be seriously injured or to die during transport.

Upon arrival at the short term holding facility, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are fed good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. At the short-term holding facility, a veterinarian examines each load of horses and provides recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club feet, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the AVMA. Wild horses in very thin condition or animals with injuries are sorted and placed in hospital pens, fed separately and/or treated for their injuries as indicated. Recently captured wild horses in very thin condition may have difficulty transitioning to feed. Some of these animals are in such poor condition that it is unlikely they would have survived if left on the range. Similarly, some mares may lose their pregnancies. Every effort is taken to help the mare make a quiet, low stress transition to captivity and domestic feed to minimize the risk of miscarriage or death.<sup>13</sup>

---

13. Due to the current condition of the wild horses within the proposed gather area, issues relating to feed transition or miscarriage are not expected.

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, drawing a blood sample to test for equine infectious anemia, vaccination against common diseases, castration, and de-worming. During the preparation process, potential impacts to wild horses are similar to those that can occur during handling and transportation. Serious injuries and deaths from injuries during the preparation process are rare, but can occur.

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

Adoption or Sale with Limitations, and Long Term Pastures

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for wild horses over 18 months of age. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the wild horse or burro for one year and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse or burro after an inspection from an official, veterinarian, or other individual approved by the authorized officer to ensure humane care, at which point the horse or burro becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR Subpart 4750.

*A mare and her new born foal. This mare was gathered from Callaghan HMA in January 2009 then bought through the sale program by an individual in North Carolina. The photo was taken just 6 months after the gather.*



Potential buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old; or has been offered unsuccessfully for adoption three times. The application also specifies that buyers are not to re-sell the animal to slaughter buyers or anyone who would sell the animal for commercial processing. Sales of wild horses

are conducted in accordance with Bureau policy, and consist of animals over 10 years of age and animals that are generally not adoptable.

Because the large majority of animals removed during the proposed gather would be weanlings and yearlings, these animals would be highly adoptable. Additionally because of the recent gathers within these HMAs to achieve AML, the animals were noted to be in good health and body condition during previous flights, which will help them to endure the gather, preparation and subsequent adoptions better than animals gathered from ranges that were severely overpopulated. Few animals would be gathered that would need to go to LTHPs or sale.

Between 2007 and 2009, nearly 62% of excess wild horses or burros removed through BLM gathers were adopted and about 8% were sold with limitation (to good homes) to qualified individuals. Wild

horses generally 5 years of age and older (those for which there is less adoption or sale demand) are transported to LTHPs. Each LTHP is subject to a separate environmental analysis and decision making process. Wild horses in LTHPs remain available for adoption or sale to individuals interested in acquiring a larger number of animals and who can provide the animals with a good home. The BLM has maintained LTHPs in the Midwest for over 20 years.

Potential impacts to wild horses from transport to adoption, sale or LTHP are similar to those previously described. One difference is that when shipping wild horses and for adoption, sale or LTHP, animals may be transported for a maximum of 24 hours. Immediately prior to transportation, and after every 18-24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 15-25 pounds of good quality hay per horse/burro with adequate bunk space to allow all animals to eat at one time. Most animals are not shipped more than 18 hours before they are rested. The rest period may be waived in situations where the travel time exceeds the 24-hour limit by just a few hours and the stress of offloading and reloading is likely to be greater to the animals than the stress involved in the additional period of uninterrupted travel.

LTHPs are designed to provide excess wild horses with humane, life-long care in a natural setting off the public rangelands. There, wild horses are maintained in grassland pastures large enough to allow free-roaming behavior (i.e., the horses are not kept in corrals) and with the forage, water, and shelter necessary to sustain them in good condition. About 22,700 wild horses, that are in excess of the existing adoption or sale demand (because of age or other factors), are currently located on private land pastures in Iowa, Kansas, Oklahoma, and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTHP are highly productive grasslands as compared to more arid western rangelands. These pastures comprise about 256,000 acres (an average of about 8-10 acres per animal). The majority of these animals are older in age.

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

#### *Euthanasia and Sale without Limitation*

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is required under the WFRHBA, Congress prohibited the use of appropriated funds between 1987 and 2004 and again in 2010 for this purpose. It is unknown if a similar limitation will be placed on the use of Fiscal Year 2011 appropriated funds.

### **Alternative 1**

Under Alternative 1, there would be no active management to maintain the population size within the established AML at this time. In the absence of a gather, wild horse populations would continue to grow. The New Pass/Ravenswood HMA would benefit from one additional year of partial fertility control effectiveness in 2011 before returning to normal growth rates of 17-20% annually. The Callaghan Complex would benefit from two more years of fertility control effectiveness through 2012 before resuming normal growth rates averaging 17.5% annually.

The Callaghan Complex is near the upper limit of AML and would exceed that limit in 2011 without a gather and removal now. The New Pass/Ravenswood HMA would also exceed the AML in 2011 without a gather. To delay a gather would result in impacts to the range associated with an overpopulation of wild horses over AML. Additionally, delay of a gather would require that additional animals are removed from the range in the future. Based on National and State gather priorities, it is estimated that New Pass/Ravenswood would not be gathered until at least 2012, and the Callaghan Complex in 2013, as the average gather cycle for the Battle Mountain District is 5-7 years, regardless of population size.

Population modeling indicated that these gathers would involve the removal of approximately 1,850 wild horses or 300% of that removed under the Proposed Action over a 10 year time period. The excess animals would be transported to BLM short-term corral facilities where they would be prepared for adoption, sale or long-term holding. The modeling indicates that approximately 1,361 wild horses 0-4 years of age would be removed under Alternative 1 as compared to only 584 removed under the Proposed Action. Additionally, the model indicates that 468 wild horses 5 years of age or older would be removed under Alternative 1 over the next 10 years. Any excess animals not adopted or sold would be maintained at a cost of up to \$12,000 per horse over 20 years, adding up to over 15 million dollars.

### **3.3. Livestock Management**

#### ***Affected Environment***

Detailed information about the authorized livestock use within these HMAs is provided in the 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs identified in Section 1.1. Refer to Map 1 which displays the Allotment boundaries in addition to the HMA boundaries within the proposed gather area.

As detailed in the 2007 and 2008 gather EAs, numerous changes to the livestock management systems have been made over the recent years to include reductions in permitted use and changes to the season of use. Observations made during 2010 monitoring found improvements to riparian areas in portions of some allotments that could be attributed to the changes in the livestock grazing systems as well as recent wild horse gathers to remove excess wild horses.

No additional changes to the livestock management systems have taken place since issuance of these most recent gather EAs, and livestock use within the allotments associated with the HMAs has been in accordance with the grazing permits. The tables below display the actual use<sup>14</sup> that has occurred within these areas since the most recent gather EA. The grazing allotment and pasture boundaries within the

---

14. If actual use was not submitted by the permittee then billed use was used instead. 43 CFR 4100.0-5 defines Animal Unit Month (AUM) as the amount of forage necessary for the sustenance of one cow or its equivalent for 1 month (which equates to 5 sheep).

allotments do not correspond to the HMA boundaries, and therefore, permitted use and actual use within these allotments does not perfectly correspond to use by livestock within the HMA boundaries.

**Austin Allotment (Callaghan HMA)**

Refer to the 2008 Callaghan EA for more detailed information about the livestock grazing permitted within the proposed gather area. The following table provides actual use incurred within the pastures or use areas that are partially or entirely within the HMA since the issuance of the previous gather EAs. The permitted use is also only for those areas and does not reflect the permit for the entire allotment.

**Table 10. Austin Allotment 2008 Actual Use**

Pasture	Silver Creek Ranch, Inc. (sheep and cattle)	Gallagher
Mountain	1,806	-
Italian Canyon	-	-
Elkhorn	237	75
Upper & Middle Italian	150	-

**Table 11. Austin Allotment 2009 Actual Use**

Pasture	Silver Creek Ranch, Inc. (sheep and cattle)	Gallagher
Mountain	1,725	-
Italian Canyon	-	-
Elkhorn	123	134
Upper & Middle Italian	85 <sup>15</sup>	-

The actual use within the Austin Allotment ranged from 42% to 86% for the permittees within these use areas between 2008 and 2009. The total permitted use for these use areas within the HMA is 2,538 for Silver Creek and 178 for Gallagher.

**Gilbert Creek and Manhattan Mountain Allotments (New Pass/Ravenswood HMA)**

The permitted livestock grazing was discussed in detail within the 2007 New Pass/Ravenswood Gather EA. Please refer to that document for more information. The following tables display the actual use that has occurred since issuance of that EA. The New Pass/Ravenswood HMA encompasses 82% of the Manhattan Mountain Allotment and 86% of the Gilbert Creek Allotment. The permitted use for the Gilbert Creek Allotment is 6,453 AUMs cattle and 6,618 AUMs sheep. Permitted use for the Manhattan Mountain Allotment is 1,746 AUMs cattle.

**Table 12. Gilbert Creek/Manhattan Mountain Allotments -- 2007 Actual Use**

Pasture	Silver Creek Ranch, Inc. (sheep)	Silver Creek Ranch, Inc. (cattle)	Silver Creek Ranch, Inc. (cattle)	Ellison Ranching Company (sheep)
Silver Creek Use Area	356		4,673	-
Ellison Ranching Co. Use Area	-		-	1,026
Manhattan Mountain	-	467	-	-

15. Actual use information was either incomplete or missing; AUMs derived from billing.

**Table 13. Gilbert Creek/Manhattan Mountain Allotments -- 2008 Actual Use**

Pasture	Silver Creek Ranch, Inc. (sheep)	Silver Creek Ranch, Inc. (cattle)	Silver Creek Ranch, Inc. (cattle)	Ellison Ranching Company (sheep)
Silver Creek Use Area	208		4,525	-
Ellison Ranching Co. Use Area	-		-	2,710
Manhattan Mountain	--	368		

**Table 14. Gilbert Creek/Manhattan Mountain Allotments -- 2009 Actual Use**

Pasture	Silver Creek Ranch, Inc. (sheep)	Silver Creek Ranch, Inc. (cattle)	Silver Creek Ranch, Inc. (cattle)	Ellison Ranching Company (sheep)
Silver Creek Use Area	194		4,548	-
Ellison Ranching Co. Use Area	-		-	3,383 <sup>16</sup>
Manhattan Mountain	--	431		

The above tables show that the actual use between 2007 and 2009 ranged from 21-54% of the permitted sheep AUMs, and 70-72% of the permitted cattle AUMs within the Gilbert Creek Allotment. The actual use on the Manhattan Mountain Allotment ranged from 21-25% of the permit.

**Carico Lake Allotment (Bald Mountain HMA)**

Refer to the 2008 Callaghan EA for more detailed information about the livestock grazing permitted within the proposed gather area. The following table provides actual use incurred in the use areas within the HMA since the issuance of the previous gather EA. The permitted use is also only for those areas and does not reflect the permit for the entire allotment.

**Table 15. Actual Use within the Bald Mountain HMA portion of the Carico Lake Allotment**

Use Area	Actual Use AUMS	Permitted AUMS
<b>2008</b>		
Toyabe Mountain	1,330	1,795
Toyabe Flat	1,006	2,722
Silver Creek Ranch	36	884
<b>2009</b>		
Toyabe Mountain	0	1,795
Toyabe Flat	1,111	2,722
Silver Creek Ranch	82	884

The actual use in 2008 and 2009 ranged from 0% to 74% of the permitted use within these use areas.

**JD and Grass Valley Allotment (Rocky Hills HMA)**

The following tables display the actual use that has occurred since the most recent gather within the use areas that fall partially or entirely within the Rocky Hills HMA. The permitted use is also only for those areas and does not reflect the permit for the entire allotment. Refer to the 2008 Callaghan EA for more information.

16. Actual use information was either incomplete or missing; AUMs derived from billing.

**Table 16. 2009 Actual Use within the Rocky Hills HMA portion of affected Allotments**

Allotment	Pasture	Actual Use (AUMs)	Permitted AUMs
Grass Valley	Upper McClusky	107	4,011
	Native Mtn	774	
	Native Valley Floor	2,039	
	Buckingham	1,034	
JD	Rocky Hills	1,392	4,276
	Trail Canyon	1,831	
	Tonkin Summit	571	

**Table 17. 2008 Actual Use within the Rocky Hills HMA portion of affected Allotments**

Allotment	Pasture	Actual Use (AUMs)	Permitted AUMs
Grass Valley	Upper McClusky	150	4011
	Native Mtn	709	
	Native Valley Floor	1,686	
	Buckingham	1,034	
JD	Rocky Hills	60	4276
	Trail Canyon	2,355	
	Tonkin Summit	558	

Within the Rocky Hills HMA, the actual use for livestock ranged from 89-98% of the permitted use within the Grass Valley Allotment and 69-88% within the JD Allotment.

**Simpson Park and Grass Valley Allotments (East Callaghan HMA)**

The following tables display the actual use for the use areas that fall entirely or partially within the Callaghan HMA on the east side of the HMA. Only the permitted use for these use areas is displayed and does not represent the permitted use for the entire HMA.

**Table 18. 2009 Actual Use within the Callaghan HMA portion of affected Allotments**

Allotment	Pasture	Actual Use (AUMs)	Permitted AUMs
Simpson Park	Willow/Barton (sheep)	116	1,196
	Willow/Barton (cattle)	569	
Grass Valley	Callaghan Mtn	649	4,868 (odd years)
	Cowboy Flat	325	

**Table 19. 2008 Actual Use within the Callaghan HMA portion of affected Allotments**

Allotment	Pasture	Actual Use (AUMs)	Permitted AUMs
Simpson Park	Willow/Barton (sheep)	118	1196
	Willow/Barton (cattle)	240	
Grass Valley	Callaghan Mtn	506	6,503 (even years)
	Cowboy Flat	1,282	

As displayed in the tables, actual use for the Simpson Park allotment ranged from 30-57% of the permitted use and the actual use within the Grass Valley Allotment ranged from 20-27% of the permitted use within this portion of the Callaghan HMA.

## ***Environmental Consequences***

### **Proposed Action**

Impacts to livestock would be similar to those described in the EAs referenced above. This analysis is incorporated by reference. Indirect impacts resulting from the Proposed Action would include continued improvement to rangeland and riparian habitat as the wild horse populations in these HMAs are maintained within the established AML ranges, and avoidance of degradation to the resources due to an overpopulation of wild horses.

### **Alternative 1**

The population model indicates that with a delay of a gather, population sizes within these HMAs would reach average population sizes of 120-157% of AML before another gather occurred (at a five year frequency). Populations of wild horses in excess of AML would have negative impacts to vegetation and riparian resources, affecting potential improvement to these areas that could have occurred. These indirect impacts would affect livestock through the condition and availability of forage and water within these HMAs.

### ***3.4. Noxious Weeds, Invasive and Non-Native species***

Detailed information about the noxious weeds and invasive species within these HMAs is provided in the 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs identified in Section 1.1.

## ***Environmental Consequences***

### **Proposed Action**

Impacts to noxious weeds and invasive species would be similar to those described in the two supporting EAs referenced above. This analysis is incorporated by reference. As the populations are maintained within the established AML ranges, impacts due to an overpopulation of wild horses would not occur and improvement to rangeland health would be promoted. Healthy rangelands are more resistant to the establishment and spread of noxious weeds, invasive or non-native plant species.

### **Alternative 1**

The population modeling indicates that under Alternative 1, wild horse populations would likely reach at least 120-157% of the upper limit of the established AML before a gather would be conducted to remove excess wild horses. Through over population of wild horses, trailing, soil disturbance, utilization and trampling would increase. Disturbances such as these and subsequent impacts to rangeland health increase vulnerability to the establishment and spread of noxious weeds, invasive or non-native plant species.

### ***3.5. Rangeland Vegetation Resources (Forest and Rangeland)***

Detailed information about the vegetation resources within these HMAs is provided in the 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs identified in Section 1.1.

Additional monitoring has been completed within the New Pass/Ravenswood, Callaghan and Rocky Hills HMAs in 2009 and 2010. Sixteen new Key Management Areas (KMAs) were established within these HMAs to collect long and short term monitoring data. The field work included installation and reading of nested frequency studies (for baseline trend data), measuring line intercept, soil stability and documentation of apparent trend and rangeland vegetation characteristics and other rangeland health information. Within a portion of the Rocky Hills HMA, Eastern Nevada Landscape Coalition collected

nested frequency, production, gap intercept, line point cover and soil stability data as part of the monitoring for the Three Bars Landscape Restoration Project. Riparian monitoring was completed within the New Pass/Ravenswood HMA in 2010. Refer to Section 3.6 for this information.

The precipitation patterns of the area were discussed in detail in the 2008 Callaghan Complex Gather EA. Prior to the most recent Callaghan Complex Gather, the area experienced drought conditions marked by precipitation levels that were only 58% of the historic record average in 2008. Drought conditions may occur 1 of every 3-4 years throughout central Nevada. Precipitation levels were 99% of the average in 2009, and are currently 73% of average in 2010 (through July)<sup>17</sup>. The recent gathers in conjunction with moderately increased precipitation levels have helped to encourage improvement in these HMAs. Changes in vegetation communities in the Great Basin are slow and may take decades to be measurable. Protecting the wild horse habitat in these areas from further decline and ensuring continued upward trends depends on the ability to maintain wild horse populations at proper levels over the long-term.

Through the monitoring, the impacts of past overpopulation of wild horses in these HMAs was evident as indicated by pedestalling of perennial grasses, severe past use and death of perennial grass species, limited or absence of key perennial species in the plant communities, trailing and large expanses of bare ground in some areas. However, some slight improvement was noted through increased presence of some key grasses caged within shrubs reduced levels of utilization and reduced presence of trampling and trailing by wild horses. These observations are encouraging and provide a preview of further improvement possible in the years to come if the wild horse population levels are kept at proper levels.



*New key area in the Callaghan HMA – nested frequency transect July 2010.*



*An example of “pedestalling” of the bluegrass plants, in which wind or water erosion of the soil results in exposure of plant roots to the drying effects of the environment.*

In 2009, additional KMAs were established throughout the Grass Valley Allotment in preparation for a Rangeland Health Evaluation that will be completed in the coming years. New KMAs were established in the Callaghan and Rocky Hills HMAs and nested frequency data collected at these locations to establish baseline trend. Documentation of vegetation resources has also been recorded through aerial photos taken throughout all of the involved HMAs during inventory flights.

The following table includes a brief summary of vegetation and other conditions noted at eight key areas

---

17. Beowawe University of Nevada Gund Ranch Weather Station COOP 260800. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?nv0800>

monitored in 2010. The frequency data collected at these locations has not yet been compiled. These key areas were established between 2007 and 2010 specifically (though not exclusively) for monitoring of wild horse habitat, as limited key areas existed within the HMAs.

**Table 20. Vegetation observations within Callaghan HMA – 2010.**

HMA	Key Area/Area	Comments/Observations
Callaghan	A-15 (Upper Alex Canyon)	Key grass species primarily caged within woody species such as rabbitbrush and sagebrush. Cheat grass is dominant throughout area. Rabbitbrush seedlings are present which suggests it may be increasing. Utilization on this year's plant growth has occurred. Younger squirreltail and basin wildrye plants in interspaces which may suggest increasing. Wild horses and cattle were observed in and around Alex Canyon.
	A-20 (Lower Alex Canyon)	Utilization has occurred on squirreltail and basin wildrye species with heavier levels of utilization occurring on lupine. The more vigorous species of squirreltail and basin wildrye are often caged. Sandberg's bluegrass and squirreltail are the dominant grass species present at the site (key grasses limited or missing). Wild horses were observed approximately 500 yards from key area.
	A-21 (Near Seeding)	This site shows a possibility of heavy past use due to the low amounts of key grass species and high levels of Sandberg's bluegrass. Pedastalling of bluegrass is occurring at moderate levels. Squirreltail is mostly caged and the site lacks key species such as Indian ricegrass and bluebunch wheatgrass.
	A-22 (North of Hall Creek)	Caging of basin wildrye and Indian ricegrass is uncommon. Slight levels of utilization on Indian ricegrass and basin wildrye. Vegetation at this site appears healthy and vigorous in size, shape, color, and reproductive capability. Seed stalks are still attached to basin wildrye and Thurber's needlegrass.
Grass Valley	GV-33 (Cowboy Rest)	Sandberg's bluegrass and other grasses are dead centered which may suggest heavier past use of the area. Utilization has occurred on this year's growth. Sandberg's bluegrass is the dominant species and pedastalling is common. Low amounts of key grass species present at the site and squirreltail and Indian ricegrass caging is common. Grass species contain lower levels of vigor in size, shape, and color.
	GV-34 (Corral Canyon)	Caging of key species is common throughout this area. Thurber's needlegrass is showing both pedastalling and caging. There is a low vigor level (color, height, shape) especially in Thurber's needlegrass and Indian ricegrass species. Bluebunch wheatgrass present but rarely encountered. There is utilization on Thurber's needlegrass and Indian ricegrass. Sandberg's bluegrass appears to be increasing throughout the interspaces at this site. Many of the grasses have matured and seeded.
	GV-35 (North Skull Creek)	Some areas express water erosion (erosion pavement, pedastalled areas, and water flow pattern) and slight terraces in the soil. Low species diversity among the grasses. Sandberg's bluegrass is the dominant species at this site. Squirreltail is of low vigor and mostly caged. Utilization has occurred on vetch and <i>astragalus spp.</i> . Ground litter is minimal and "paved" surface areas are common. Shrubs are dominant throughout the site.
	GV-36	Overall, species diversity and vigor is high. There is slight utilization on key species such as Thurber's needlegrass and

HMA	Key Area/Area	Comments/Observations
	(South Skull Creek)	bluebunch wheatgrass. Squirreltail is also showing low levels of utilization. More vigorous individuals of bluebunch and squirrel tail are often found caged. Some Thurber's needlegrass plants are dead centered and pedestalled, and appears less vigorous than other species such as Sandberg's bluegrass, squirreltail, bluebunch wheatgrass, and basin wildrye. Younger individuals of basin wildrye are common at this area. Browse species such as service berry and snow berry did not show hedging or heavy utilization.

In addition to these monitoring efforts, monitoring within previously burned areas was also completed within the New Pass/Ravenswood and Callaghan HMAs within the Raven and Silver Creek burned areas. The Raven Fire burned in the New Pass/Ravenswood HMA in 2007. Refer to the 2007 New Pass/Ravenswood HMA EA for more information. Currently, most sites monitored within the burned area are dominated by Russian thistle, annual mustard, clasping pepper weed, cheatgrass, and halogeton. Sandberg bluegrass and bottlebrush squirreltail are lesser species on these sites. Seeded species were rarely seen along transect, and those present in the area include basin wildrye and Indian ricegrass. Young sagebrush, greasewood, and rabbitbrush are present at some sites.



2007 Raven burn.



1999 Antelope Burn

Both photos taken during the aerial inventory of the New Pass/Ravenswood HMA in September 2009.

The Grass Valley fire burned 1,200 acres within the western portion of the Rocky Hills HMA in August 2010.

***Environmental Consequences***

**Proposed Action**

Impacts to rangeland vegetation resources would be similar to those described in the EAs referenced above. This analysis is incorporated by reference. Through the Proposed Action, the wild horse populations would be maintained within the established AML ranges and degradation occurring due to an over population of wild horses would not occur. Riparian and upland vegetation resources would benefit and would exhibit improvement as indicated by increased vigor, production and frequency of desirable key plant species and improved soil stability. Improvement would be slow to occur, and would occur most often during years of average or above average precipitation levels. During years of drought or low precipitation, improvement would be stalled or could be reversed. Healthy plants that are able to finish their life cycles, set seed and store carbohydrates before the end of the growing season are more capable of withstanding drought, maintaining their presence in the plant community for years to come. Slight improvement has already been observed within the HMAs since the last gathers.

Maintaining AML would further continue this improvement and promote progress towards attainment of Rangeland Health Standards.

### **Alternative 1**

The population modeling indicates that without a gather until 2012 or 2013 (which is the estimated time for a future gather), that populations within the AMLs would reach at least 120-157% of the upper limit of the established AMLs. Impacts to the rangeland vegetation resources including trailing, trampling, and utilization levels above objectives would occur throughout portions of the HMAs dependent upon wild horse distribution, environmental conditions and precipitation levels. Impacts would correspond to population levels in excess of AMLs and concentrations of animals within the HMAs. Improvement to rangeland health (increased vigor, production, frequency of plant species and improved soil stability) that has been realized since the last gather would be offset by impacts received due to overpopulation. As the population would continue to increase above AMLs impacts would continue and would include reduced presence of key perennial grasses and forbs in the understory, increased occurrence of cheatgrass and other annual species, increased bare ground and soil erosion and decreased rangeland health. Progress would not be made towards attaining Rangeland Health Standards.

### ***3.6. Riparian-Wetland Resources and Water Quality***

Detailed information about the riparian and wetland resources within these HMAs is provided in the 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs identified in Section 1.1. Additional monitoring has taken place at numerous riparian areas within the affected HMAs through on the ground site visits and aerial observations and documentation during wild horse inventory. Despite the recent gathers, the wild horse populations within Rocky Hills and New Pass/Ravenswood HMAs continue to be represented by uneven distribution of wild horses consisting of large concentrations of animals in certain locations of the HMA. These concentrations are in some cases being caused by limited waters, but are also resulting in concentrated uses on these riparian areas as indicated by trailing to water sources and trampling, utilization and bare ground at spring and other water sources.

Twelve riparian locations were assessed in 2010 within the New Pass/Ravenswood HMA through site visits, field notes and photos. Functioning condition assessments were not completed at this time. The observers noted the species present and whether they were early seral (colonizing species) or late seral (stabilizing species), the amount of vegetation cover or bare ground, soil movement, bank alteration, water available and the use by livestock, wild horses or wildlife.

These riparian areas consisted of springs and developed water improvements that were observed during wild horse inventory flights in September 2008. Some of these sites had been previously rated for functioning condition (2006) and some had not. The data recorded and the photos taken at these sites indicate that wild horse use of most of these springs has been heavy. These sites may have experienced slight improvement since the previous gather but are at serious risk of further decline due to lack of vegetation and lack of appropriate riparian species, excessive bare ground, severe disturbance of banks from hoof action, and trailing. These sites are located primarily in the Manhattan Mountain Allotment, with two sites located within the Gilbert Creek Allotment. The table below summarizes the observations made at these locations.

**Table 21. Riparian monitoring observations, New Pass/Ravenswood HMA 2010.**

Area #	Name/Location	Site Type	Previous Rating	Type of vegetation	Sign Present
1	Caton Spring	Undeveloped Spring	Non-functional in 2006	Late and Mid Seral	Wild horse and deer
	Issues/Comments: No riparian vegetation at ponded area. Excessive disturbance from hoof action. Light use of rushes (<30%).				
2	Rocky Gap Spring	Undeveloped Spring	Non-functional in 2006	Early and Mid Seral	Fresh wild horse sign and tracks prevalent
	Issues/Comments: Excessive bare soil, one of two springs has no vegetation. Utilization of rushes est. 30-50%. No recruitment (increase) of willow. Heavy bank alteration. Many trails into the area. Water is low flowing.				
3	South of Ravenswood Peak	Stringer Meadow with pipeline/trough	Not Rated	Early and Mid Seral	Fresh wild horse sign, historic livestock
	Issues/Comments: Hoof disturbance concentrated near spring source. No stabilizing species present at source. Some recruitment of narrowleaf willow occurring from existing mature clump. Current minimal utilization (<10%). Trickle of water into trough.				
4	Near Meadow Spring	Undeveloped Spring	Not Rated	All Early Seral	Fresh wild horse and historic cattle
	Issues/Comments: Poor condition with excessive hoof alterations and bare soil. Riparian area shrinking from erosion and terracing. Hummocking. Colonizing species. Trailing into the spring.				
5	Lower Meadow Spring	Spring source/stream channel	Not Rated	Mid Seral and Canada thistle (noxious)	Fresh wild horse tracks, wild horse sign and old cattle sign
	Issues/Comments: Lack of adequate vegetation. Accelerated erosion and active downcutting occurring. Trailing to the stream. Ponded water. Large amounts of bare soil and excessive bank alteration				
6	Steiner Spring	Developed Spring (pipeline to a trough)	Non-Functional in 2006	Mid Seral	Old cattle sign
	Issues/Comments: Rose is browsed est. 30%. Water overflows the trough.				
7	Upper Willow Creek	Spring source/stream channel	Not Rated	Primarily Early Seral, some Mid Seral	Wild horses at the location. Fresh wild horse sign and tracks
	Issues/Comments: Bare soil at the spring source. Stream reach lacks vegetation. Unstable banks. Bank alteration from hoof disturbance. Trails. Excessive bare soil and erosion affecting water quality.				
8	Upper Willow Creek	Undeveloped Spring	Not Rated	Early, Mid and Late Seral	Old wild horse and cattle sign
	Issues/Comments: Spring is terraced (sunk in). Some water available. Low utilization levels. 2010 photo reflects more vegetation than observed aerially in 2008.				
9	Willow Creek Spring	Spring source/stream channel	Not Rated	Mix of Early, Mid and Late Seral	Fresh wild horse and cattle tracks and sign
	Issues/Comments: Water available throughout reach. Reach is good condition. Minimal bank alteration and utilization. 3 foot head cut is a threat to the system. Vegetation consists of stabilizers, colonizers and willow. Nebraska sedge present at lower end. Utilization of woody species estimated 20-40%. Good vegetation cover. Recruitment of Booths Willow.				
10	Lower Willow Creek Spring	Spring source/stream channel	Properly Functioning in 2006	Early, Mid and Late Seral	Cattle present. No wild horse sign
	Issues/Comments: Some of the vegetation present indicates disturbance. Baltic Rush is present, but not throughout. Utilization of rush is 20-40%. Water available in 2 pools at top and bottom of reach. Lacks stabilizing vegetation and bank cover. Disturbance from hoof action created excessive bank alteration. Bare banks and trailing.				
11	West of 305 by	Well/Spring/Developed	Not Rated	Mid and Late	Fresh wild horse sign,

Area #	Name/Location	Site Type	Previous Rating	Type of vegetation	Sign Present
	private land fence	trough		Seral	historic cattle sign
	Issues/Comments: Borders private land. Pipe exits the ground, water accessible in ponded area around the pipe. Troughs are non-functional.				
12	Gilbert Creek Southeast Spring	Undeveloped Spring	Not Rated	Mid and Late Seral	Wild horses and cattle present. Fresh sign and tracks.
	Water ponded at surface is sufficient for more vegetation cover. Lack of vegetation. Some stabilizing species in sparse amounts. Poor vigor. Utilization of Nebraska Sedge est. 40-60%. Excessive bank alteration from hoof action.				

The following photos reflect the various conditions at the riparian areas assessed in the New pass/Ravenswood HMA in 2010.



Riparian area #4, near Meadow Spring. Photo on the left taken August 2010, Photo on the right taken September 2009 during an aerial inventory.



Caton Spring – riparian area #1.



Rocky Gap Spring – riparian area #2



*Upper Willow Creek. Riparian area #7 above.*



*Willow Creek Spring. Riparian area #9*



*New Pass/Ravenswood HMA --- Big Antelope Spring, located on private land, and often heavily relied on by wild horses.*



*New Pass/Ravenswood HMA --- Big George Spring, developed for, but not exclusively for wild horses in the 1990's.*

Many sites in different allotments within the HMAs are recovering sufficient vegetative and landform attributes to provide for riparian/wetland function. Wild horses and burros have a defined home range and visit spring features more frequently than others. Populations above AML and passive, continuous livestock grazing management regimes tend to cumulatively degrade certain riparian/wetland resources, because the intensity, duration and frequency of herbivory, browse and hoof alteration magnitudes are simply too great to allow for riparian function. The MLFO, through Rangeland Health Evaluations and permit renewals has made changes in recent years to the Livestock grazing systems within the affected allotments to make progress towards attaining RAC Standards and Guidelines. In many cases livestock permits were modified regarding season of use and elimination or reduction of use of riparian areas during the “hot season” to better manage for riparian function.

Site visits were conducted within the Austin Allotment at Hall, Iowa, Boone and Italian Creeks in August of 2010 to determine if utilization rates were meeting management objectives and to determine overall condition/trend of each stream system. Prominent highlights are as follows. Hall Creek had increased recruitment from key woody vegetation (i.e. willow species) supporting multiple age class structure. Iowa Creek also had good recruitment from key woody and herbaceous vegetation, particularly increased plant vigor and distribution of sedge and rush species. Sites in Boone were largely the same improvements as above, however, gully erosion is continuing to accelerate erosion into

the aquatic habitat until the gully has developed a stable dimension, pattern and profile. Italian Creek is also going through gully erosion channel evolution processes that need to establish a dynamic equilibrium with sediment, water, slope and channel width before stabilizing vegetation can establish over the long term. These improvements in riparian function and trend can be attributed to both the recent changes to livestock management in the allotment as well as the removal of excess wild horses from the Callaghan HMA in 2008/2009.

### ***Environmental Consequences***

#### **Proposed Action**

Impacts to riparian wetland resources would be similar to those described in the EAs referenced above. This analysis is incorporated by reference. Maintaining the wild horse populations within the established AML ranges and promoting thriving natural ecological balance within the HMAs would offer the best opportunity to improve riparian resources that have historically been heavily used by wild horses. Maintaining appropriate population levels and preventing over population resulting from excess wild horses would promote more even distribution throughout the HMAs, reducing concentrated use in the regions near critical water sources and would encourage improvement of these areas through stabilization of banks and soils in the area, increased production of key riparian vegetation such as sedges, rushes and willow, and would improve overall quantity and quality of these areas for use by wildlife in addition to wild horses and livestock. Through continued improvement, riparian systems would increase trends in functioning condition and make significant progress towards meeting the Standards for Rangeland Health.

#### **Alternative 1**

Without a gather to administer fertility control and remove a minimal number of wild horses at this time, the population would continue to grow and exceed the upper limit of the established AMLs throughout all HMAs by spring 2011, and could exceed 120-157% of these AMLs by the time another gather could be scheduled to remove excess wild horses. Populations above AML would compete for available waters and may increase trailing between desired forage areas and perennial water sources. In drought years, water could become limiting especially within the Rocky Hills and New Pass/Ravenswood HMAs. Increased density of wild horses within the HMAs would increase the disturbance and impacts to riparian areas which would include trailing, trampling and utilization of riparian vegetation. Soils would be disturbed in these areas leading to increased erosion and sedimentation of the riparian systems. Impacts to these areas would correspond to the levels of the populations in excess of AMLs and the number of available waters in relation to the populations. Progress would not be made towards attaining Proper Functioning Condition on these systems or towards meeting Rangeland Health Standards.

### **3.7. Soils**

Detailed information about soils within these HMAs is provided in the 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs identified in Section 1.1. Some soil stability sampling has been completed within the Rocky Hills and Callaghan HMAs, but has not been analyzed or summarized at this time.



*Cadet Trough Spring – major watering location for large numbers of horses in the Rocky Hills HMA, Sept. 2009.*



*Wild horses within a tributary of Pat Canyon in the Rocky Hills HMA, Sept. 2009.*

### ***Environmental Consequences***

#### **Proposed Action**

Impacts to soils would be similar to those described in the EAs referenced above. This analysis is incorporated by reference. Similar to other resources within the proposed gather area, soils would benefit by populations of wild horses maintained within the established AMLs. Trailing is excessive in some portions of the HMAs leading to accelerated wind and water erosion. Through maintaining proper levels of wild horses, these impacts would be lessened and soil stability could improve. As vegetation and riparian resources experience upward trends, soils would as well, as perennial key plant species increase and develop deep roots to maintain soil health.

#### **Alternative 1**

As noted under other resource sections, populations of wild horses within these HMAs could exceed 120-157% by the time a gather is conducted in the future to remove excess wild horses. Current disturbances to soils (trailing, trampling) would continue and increase proportionally to the size of the populations in excess of AML and dependent upon the concentrated distribution in some locations of these HMAs. Improvements that have been realized since the most recent gathers would be offset by new and increased disturbance caused by overpopulation of wild horses.



*Trailing within the New Pass/Ravenswood HMA which causes accelerated erosion (on the left).*

### ***3.8. Threatened & Endangered Species, Special Status Species, Migratory Birds and Wildlife***

Detailed information about wildlife within these HMAs is provided in the 2007 New Pass/Ravenswood and 2008 Callaghan Complex Gather Plan EAs identified in Section 1.1.

No federally listed threatened or endangered species inhabit the Callaghan Complex. BLM protects by

policy (see 6840 section of the BLM Manual), *special status* plant and animal species. The list includes certain species designated by the state of Nevada, as well as species designated as “sensitive” by the Nevada BLM State Director.

Sage-grouse occupy most of the proposed gather area though populations seem to be experiencing long-term declines. Sage-grouse are currently a candidate species (warranted, but not listed). Risks to these PMUs, are thought to include:

- reduction in brood rearing habitat due to erosion of stream channels (channelization),
- down-cutting and drying of meadows;
- a reduction in size of spring and seep sites due to the removal of vegetative cover and shade by ungulates;
- reduction of native perennial grasses necessary for nesting cover;
- reduction of native forbs for pre-egg laying and chick development; pinyon-juniper encroachment into big sagebrush sites;
- old, decadent big sagebrush stands;
- human disturbance;
- the loss of big sagebrush due to wildfire.

### ***Environmental Consequences***

#### **Proposed Action**

Impacts to Threatened, Endangered and Special Status Species, Migratory Birds and Wildlife would be similar to those described in the EAs referenced above. This analysis is incorporated by reference. Direct impacts to sage-grouse are not anticipated as the proposed gather would be completed during winter months and would not interfere with strutting, nesting or brood rearing activities. Refer to the SOPs. Indirect impacts to various wildlife species through the Proposed Action would include those impacts to rangeland health and improved trends in vegetation communities and riparian areas used by wildlife species. Populations within the established AMLs would ensure that unacceptable levels of competition with wildlife species do not occur as thriving natural ecological balance is maintained.



*Pronghorn Antelope in the Austin Allotment portion of the Callaghan HMA. Summer 2010.*



*Mule deer in the Grass Valley Allotment portion of the Callaghan HMA. Summer 2010.*

#### **Alternative 1**

Under Alternative 1, it was estimated that the next gather in these areas could occur in 5-7 years from the most recent gather. According to the population model, populations would reach and could exceed

120-157% of the upper limit of the established AMLs. Thriving natural ecological balance would not be maintained and excess wild horse populations would impact wildlife by causing downward trends in rangeland and riparian health and through direct competition with various species of wildlife for forage and water.

### **3.9 Health and Safety**

In recent gathers, members of the public have increasingly traveled to the public lands to observe BLM's gather operations. While many members of the public cause no problems as a result of their presence and follow BLM's directions during the gathers, a few members of the public have actively taken or attempted to take actions to obstruct or interfere with the wild horse gather operations. For example, during recent past gathers such individuals have attempted to drive into unauthorized areas or have attempted to enter into or be close to the pens where wild horses are being held following the gather. Members of the public can also inadvertently wander into areas that put them in the path of wild horses that are being herded or handled during the gather operations. Such activities, whether intentional or accidental, not only hamper the gather operations, but more importantly, create the potential for injury to the wild horses or burros and to the BLM employees and contractors conducting the gather and/or handling the horses as well as to the public themselves. Because these horses are wild animals, there is always the potential for injury when individuals get too close or inadvertently get in the way of gather activities.

The helicopter work is done at various heights above the ground, from as little as 10-15 feet (when herding the animals the last short distance to the gather corral) to several hundred feet (when doing a recon of the area). While helicopters are highly maneuverable and the pilots are very skilled in their operation, unknown and unexpected obstacles in their path can impact their ability to react, creating an extreme safety concern. These same unknown and unexpected obstacles can impact the wild horses or burros being herded by the helicopter in that they may not be able to react and can be potentially harmed or caused to flee which can lead to injury and additional stress. When the helicopter is working close to the ground, the rotor wash of the helicopter is a safety concern by potentially causing loose vegetation, dirt, and other objects to fly through the air which can strike or land on anyone in close proximity as well as cause decreased vision.

### ***Environmental Consequences***

#### **Proposed Action**

Public safety as well as that of the BLM and contractor staff is always a concern during the gather operations. During the herding process, wild horses or burros will try to flee if they perceive that something or someone suddenly blocks or crosses their path. Fleeing horses can go through wire fences, traverse unstable terrain, and go through areas that they normally don't travel in order to get away, all of which can lead them to injure people by striking or trampling them if they are in the animal's path.

Disturbances in and around the gather and holding corral have the potential to injure the government and contractor staff who are trying to sort, move and care for the horses and burros by causing them to be kicked, struck, and possibly trampled by the animals trying to flee. Such disturbances also have the potential for similar harm to the public themselves.

#### **No Action Alternative**

There would be no safety concerns to BLM employees, contractors and the general public as no gather activities would occur.

### **3.10. Wild Horse Gather Mitigation Measures**

This EA has analyzed the potential impacts that could occur with completion of a gather to remove excess wild horses. The following section summarizes the measures developed to ensure that these potential impacts are minimized or avoided entirely.

BLM staff is on-site at all times to observe the gather, monitor animal health, and coordinate the gather activities with the contractor. The SOPs outlined in Appendix A would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impacts to or injury of the wild horses. Both the BLM Wild Horse and Burro Specialists and the Gather Contractor and crew are very attentive and sensitive to the needs of all wild horses captured during gathers, and ensuring their health, safety and well being during and after the gather is a focus and priority.

BLM staff would coordinate with the contractor on a daily basis to determine animal locations in proximity to trap corrals, and to discuss terrain, animal health, gather distances and other gather logistics to ensure animal safety.

An Animal and Plant Inspection Service (APHIS) or other veterinarian may be on-site during the gather, as needed, to examine animals and make recommendations to the BLM for care and treatment of wild horses. Injuries would be examined and treated if needed by a veterinarian at the holding corrals.

Fertility control treatment would be conducted in accordance with the approved standard operating and post-treatment monitoring procedures (SOPs, Appendix C). The treatment would be controlled, handled, and administered by a trained BLM employee.

BLM policy prohibits the gathering of wild horses with a helicopter, (unless under emergency conditions), during the period of March 1 to June 30 which includes and covers the six weeks that precede and follow the peak of foaling period (mid-April to mid-May).

The gather helicopter pilot allows the wild horses to travel at their own pace for most of the distance to the gather location. The pilots are very experienced and do not place undue pressure on the horses until just the right time when entering the wings of the gather trap, when it is important to move the horses safely into the gather corrals and prevent them from turning back or trying to disband at the last minute. This is to avoid the need to re-gather or to rope the horses from horseback which could expose the wild horses to additional stress or injury. Foals separated during the gather process are safely gathered and transported to the gather corrals to be reunited with their mother.

Transport and sorting is completed as quickly and safely as possible and to move the horses into the large holding pens to settle in with hay and water. When releasing animals back to the range, they would be returned to same general area from which they were gathered.

Any old, sick or lame horses unable to maintain an acceptable body condition (greater than or equal to a Henneke body condition score (BCS) 3) or with serious physical defects such as club feet, severe limb deformities, or sway back would be humanely euthanized as an act of mercy. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Washington Office Instruction Memorandum 2009-041).

Individual animals are monitored and veterinary or supportive care is administered as needed. Electrolyte powder can be administered to the drinking water and electrolyte paste administered to individual animals if needed. The overall health and well being of the animals is continually monitored through both summer and winter gathers to adjust gather operations as necessary to protect the animals from gather related health issues. Any orphan foals are attentively cared for through administering electrolyte solutions and/or feeding milk replacer as needed to support their nutritional needs. Foster or adoptive homes are identified to ensure good care to these young animals.

Should the need arise; BLM equipment operators would plow trails in the snow to facilitate the safe and humane movement of horses to a gather site. If dust becomes an issue, BLM ensures that contractors slowing speeds on dusty roads and water down corrals and alleyways.

The SOPs in Appendix A identify additional measures implemented during the completion of wild horses gathers to minimize or avoid impacts to wildlife, and other resources in addition to wild horses. Gather corral sites and temporary holding facilities would be located in previously used sites or other disturbed areas whenever possible (such as gravel pits, or road pull outs or junctions). Gather areas would not be constructed near riparian areas or infestations of noxious weeds. Potential trap sites or holding facilities would be inventoried for cultural resources and noxious weeds. If cultural resources or noxious weeds are encountered, these locations would not be utilized unless they could be modified to avoid any impacts.

## **4. Cumulative Effects Analysis**

The NEPA regulations define cumulative impacts as impacts on the environment that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The cumulative impacts study area (CSA) for the purposes of evaluating cumulative impacts is the Callaghan, Bald Mountain, Rocky Hills and New Pass Ravenswood HMAs.

According to the 1994 BLM *Guidelines for Assessing and Documenting Cumulative Impacts*, the cumulative analysis should be focused on those issues and resource values identified during scoping that are of major importance. Accordingly, the issues of major importance to be analyzed are: Wild Horses and Vegetation.

The cumulative affects analysis completed for the 2007 New Pass/Ravenswood and 2008 Callaghan Complex EAs has been reviewed and found to be very comprehensive and address most cumulative impacts of the Proposed Action and Alternative 1. Please refer to these documents for this information. The section below will only address specific cumulative impacts that differ from those already addressed.

### **4.1. Past and Present Actions**

#### **Wild Horses**

The actions which have influenced today's wild horse populations are primarily wild horse gathers, which have resulted in the capture and removal of excess horses, and release of horses back into the

HMAAs (refer to Chapter 4 of the above referenced EAs for additional information). Section 3.3 summarizes the results of the most recent gathers conducted in these areas.

### **Vegetation**

Refer to the EAs referenced above for cumulative effects analysis. Currently slight improvement has been observed within portions of these HMAAs which is attributed to the previous gathers and removals of excess wild horses, changes to livestock management (refer to previous EAs), and moderately increased precipitation levels since 2008. Past impacts by wild horse overpopulation have included heavy and severe utilization levels, trampling, heavy trailing and concentrated use of riparian areas. The present condition of the vegetation resources is characterized by a lack or absence of many of the key perennial species that are part of the Potential Natural Community for these areas, especially in the lower elevations that receive lower precipitation levels.

### **4.2. Reasonably Foreseeable Future Actions**

#### **Wild Horses**

Over the next 10-20 year period, reasonably foreseeable future actions include gathers to remove excess wild horses in order to manage population sizes within the established AML ranges. These gathers could continue on a two year schedule, retreating with fertility control as described for the Proposed Action. Another scenario which could occur would be to repeat gathers every 3-5 or 5-7 years with or without fertility control. Future gathers could also involve adjustment of sex ratios to slow population growth. A Herd Management Area Plan (HMAP) could also be completed which would establish short and long-term management and monitoring objectives for the HMAAs and their habitat. It is anticipated that analysis of monitoring data will result in the need to reduce the AML of the New Pass/Ravenswood HMA as well as to set an AML range in future years. Conversely, future improvements in habitat could result in increases to AMLs in any or all of these HMAAs.

Any future wild horse management would be analyzed in appropriate environmental documents following site-specific planning with public involvement.

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

While there is no anticipation for amendments to the Wild Free-Roaming Horses and Burros Act that would change the way wild horses and burros could be managed on the public lands, the Act has been amended three times since 1971. Therefore, there is potential for amendment as a reasonably foreseeable future action, though the specifics any such amendments are unknown.

Similarly, the BMDO is in the process of revising the Tonopah and Shoshone-Eureka Land Use Plans. The revised Plan could influence the management of wild horses within the District in the future pertaining to Herd Management Area Plans, gathers, allocation of use to wild horses, burros, livestock and wildlife, monitoring and setting and adjusting AMLs.

### **Vegetation**

Livestock grazing is expected to continue at similar stocking rates and utilization of the available

vegetation (forage) would also be expected to continue at similar levels. Rangeland Health Assessments would be planned to be completed in future years which could result in changes to livestock grazing systems such as changes to season of use, reduced or increased permitted use levels, or implementation of rotational grazing systems. The Grass Valley Allotment is tentatively schedule for evaluation in the next few years and could involve changes to the permitted use for livestock or changes to the season of use. Continuing to graze livestock in a manner consistent with grazing permit terms and conditions would be expected to make significant progress towards achieving Standards for Rangeland Health. Other actions which could affect vegetation include future wild horse gathers as identified above. Currently, geothermal power exploration and development is occurring within portions of the New Pass/Ravenswood HMA and near the southeast boundary of the Callaghan HMA. Mining exploration and development has been a part of the history of all of these HMAs. These activities could continue and increase, causing disturbance to vegetation resources. These actions could be large in magnitude and could span 10-50 years into the future. Wildfire and the associated stabilization/rehabilitation is another reasonably foreseeable future action. Wildfire changes the vegetative composition and could affect forage quality and quantity and the habitat for wild horses, livestock and wildlife.

### **4.3. Cumulative Impacts Summary**

#### ***Impacts Common to the Proposed Action Alternative***

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

The other cumulative effects which would be expected when incrementally adding the Proposed Action Alternative to the CSA would include continued improvement of upland vegetation conditions, which would in turn benefit permitted livestock, native wildlife, and wild horse population as forage (habitat) quality and quantity is improved over the current level.



*Release of Rocky Hills HMA mares back to the HMA following the gather in January 2009.*

A continued two-year capture, treat for fertility control and release protocol would result in the population growth balancing with the minimal removals of young horses and natural mortality levels.

Eventually, few or no horses would need to be removed from the range in future gathers. Under the two year protocol, negligible numbers of animals would have to be put in long term holding or through the sale program, and all young horses removed from the range would be healthy and highly adoptable.

A cycle of AML maintenance, improved rangeland and generation after generation of improvements to animal health could result. In past years, the gather frequency has averaged 5-7 years with populations increasing to many times the AML, followed by gathers that required the removal of a large portion of the population (up to 92%) to reach AML. Animal health was an issue during some of these gathers due to over population coupled with drought conditions, which often precluded the ability to select animals for release based on characteristics, age or other traits. The two-year protocol would result in the *release* of approximately 80 percent of the animals gathered, removal of primarily young animals, and would maintain stable populations within the established AML ranges, avoiding the cycle of over population, gather, removal of large numbers of excess animals in order to achieve the lower limit of AML.

Through a two-year protocol, repeated gathers would have the effect of reducing the gather efficiency as wild horses learn to avoid the helicopter. Though horses would be disturbed every two years, most horses would be re-released back to the range allowing for fewer disturbance to social structures.

If a two year protocol is not continued, and a gather cycle of every 3-4 or 5-7 years with fertility control occurs, affects would be similar with a few exceptions. Increased numbers of horses would need to be removed during each gather to achieve the lower limit of AML. Fertility control would not be completely effective at controlling the population because of the increased gather interval. Increased numbers of older wild horses could need to be removed that may need to be maintained in LTHPs. Age selection criteria could be implemented that would restrict removal of older horses, thus increasing the proportion of older horses remaining on the range.

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

### ***Impacts of Alternative 1***

Under Alternative 1, the wild horse populations would exceed the established AMLs in 2011 and could exceed 1,800 horses or 150%+ of the upper limit of AML. Movement outside the HMAs would be expected as greater numbers of horses compete for food, water and space. Habitat decline would occur and improvements experienced since the last gather would be offset by increasing degradation to the range proportional to the population size. Animal health would also not improve and condition of mares and foals could be less than optimum, as experienced in past gathers within the Callaghan, Bald Mountain and New Pass/Ravenswood HMAs. Cumulative impacts would result in foregoing the opportunity to improve rangeland health and to properly manage wild horses in balance with the available forage and water and other multiple uses. Attainment of site-specific vegetation management objectives and Standards for Rangeland Health would not be achieved. AML would not be achieved and the opportunity to collect the scientific data necessary to re-evaluate AML levels, in relationship to rangeland health standards, would be foregone.

## 5.0. Monitoring and Mitigation Measures

The BLM COR and PIs assigned to the gather would be responsible for ensuring contract personnel abide by the contract specifications and the SOPs (Appendix A). Ongoing monitoring of range vegetation, riparian areas, aerial population surveys, and animal health would continue.

Fertility control monitoring would be conducted in accordance with the SOPs (Appendix C). In future gathers, biological samples would be collected to analyze genetic diversity of the wild horses within these HMAs and compare to the baseline samples already analyzed.

## 6.0. List of Preparers

The following list identifies the interdisciplinary team member's area of responsibility:

Shawna Richardson	Project Lead/Wild Horse and Burro Specialist
Angelica Rose	Planning and Environmental Coordinator
Dustin Hollowell	Wild Horse and Burro Specialist (Tonopah)
Gerald Dixon	Native American Coordinator
Robert Hassmiller	Hydrologist
Michael Vermeys	Noxious and Invasive Species Specialist
Jason Spence	Rangeland Management Specialist
Ruth Luke	Rangeland Management Specialist
Susan Cooper	Wildlife Biologist

## 7.0. Consultation and Coordination

Public hearings are held annually on a state-wide basis regarding the use of helicopters and motorized vehicles to capture and transport wild horses and burros. During these meetings, the public is given the opportunity to present new information and to voice any concerns regarding the use of these methods to capture wild horses and burros. The Elko District Office held the state-wide meeting on July 1, 2010; thirteen public participants attended and their comments were entered into the record for this hearing. Most were in support of the use of helicopters and the gathering of excess wild horses. Standard Operating Procedures were reviewed in response to these concerns and no changes to the SOPs were indicated based on this review.

## 8.0. Public Involvement

On October 2, 2007, the Bureau of Land Management (BLM), Battle Mountain Field Office, sent the *New Pass/Ravenswood and Augusta Mountains HMAs Burned Area Wild Horse Removal Gather Plan and Environmental Assessment (EA) # NV062-EA07-188* to 63 organizations and individuals on the interested public mailing list for public review. One response in support of the proposed gather was received from the Nevada State Historic Preservation Office. No additional comments were received from the interested public. No prior scoping was done because of the urgent nature of the gather (post wildfire) and the timelines for completion of the EA after the fire. The Finding of No Significant Impact (FONSI) and Decision were issued for this gather on October 31, 2007. No appeals were received on the Decision.

Prior to completion of the 2008 Callaghan Complex EA, a scoping letter dated April 24, 2008, was mailed to 62 individuals, organizations or State and Federal agencies which comprise the interested public list for the Callaghan Complex.

Responses were received from the Nevada Division of State Lands and the Nevada State Historic Preservation Office in support for the proposed wild horse gather. Additional responses were received from several individuals and organizations, involving comments, questions and recommended topics for analysis within the EA. The MLFO also received comments from livestock permittees during meetings pertaining to allotment administration and monitoring. These comments/concerns were considered and incorporated in the preparation of the environmental assessment.



*Callaghan HMA gather, January 2009.*

On September 15, 2008, the MLFO, issued the *Callaghan Complex Wild Horse Gather Environmental Assessment (EA) # NV062-EA08-134* to the interested public for review. No comments were received from the interested public. A letter documenting support for the Callaghan Complex gather was received from the Nevada State Historic Preservation Office and division of State Lands. The FONSI and Decision were issued for this gather on December 9, 2008. No appeals were received on the Decision.

Notice of availability of this Environmental Assessment and Gather Plan will be sent to the interested public list for the gather area for 30 day review and comment. The EA and associated documents will also be posted on the Battle Mountain District website at [http://www.blm.gov/nv/st/en/fo/battle\\_mountain\\_field.html](http://www.blm.gov/nv/st/en/fo/battle_mountain_field.html). The 2007 New Pass/Ravenswood HMA EA and 2008 Callaghan Complex EA will also be posted on BLM's website at [http://www.blm.gov/nv/st/en/fo/battle\\_mountain\\_field/blm\\_information/national\\_environmental.html](http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_information/national_environmental.html) for the public's information.

Interested individuals should mail written comments to the BLM Mount Lewis Field Office, 50 Bastian Road, Battle Mountain, NV, 89820, attention Doug Furtado, Field Manager. Comments may also be provided through e-mail to this address: [callaghan\\_newpass\\_gather@blm.gov](mailto:callaghan_newpass_gather@blm.gov). Be advised that *only* the comments received by postal mail or to this specific e-mail address will be considered in the completion of the Final EA, Finding of No Significant Impact and Decision. Comments received through October 1, 2010 would be incorporated into the Final EA and Gather Plan.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

## 9.0. List of References

Coates-Markle, L. 2000. Summary Recommendations, BLM Wild Horse and Burro Population Viability Forum April 1999, Ft. Collins, CO. Resource Notes 35:4pp.

Garrot and Taylor, 1990 Journal of Wildlife Management 54:603-612.

Garrot, R.A. 1991. Sex Ratios and Differential Survival of Feral Horses, Journal of Animal Ecology, Vol. 60, No. 3 (Oct.1991), 929-936.

Kirkpatrick, J.F., R. Naugle, I.K.M. Lui, J. W. Turner Jr., M. Bernoco. 1995. Effects of Seven Consecutive years of PZP Contraception on Ovarian Function in Feral Mares, Biology of Reproduction Monograph Series 1: Equine Reproduction VI: 411-418.

Singer F.J., Zeigenfuss L. 2000. Genetic Effective Population Size in the Pryor Mountain Wild Horse Herd: Implications for conserving genetics and viability goals in wild horses. U.S. Geologic Survey, Midcontinent Ecological Science Center, Ft. Collins CO. Resource Notes 29: 2 pp.

Turner Jr , J.W., I.K.M. Lui, Rutberg, A., J.W., Kirkpatrick. 1997. Immunocontraception Limits Foal Production in Free Roaming Feral Horses in Nevada, J. Wildl. Manage. 61 (3):873-880.

Zoo Montana. 2000. Wildlife Fertility Control: Fact and Fancy. Zoo Montana Science and Conservation Biology Program, Billings, MT.

## ***Appendix A: Wild Horse and Burro Gather Plan and Standard Operating Procedures***

### **I. Gather Plan**

The purpose of the gather plan is to outline the methods and procedures for conducting a gather to remove excess wild horses from public lands administered by the BMDO. Implementation of the Proposed Action would require the capture and removal of approximately 86618 wild horses. Approximately 156 wild horses would be removed to achieve a post-gather population of 927 wild horses within the Callaghan, Bald Mountain, Rocky Hills, and New Pass/Ravenswood HMAs.

#### ***A. Gather Area***

The Proposed Gather Area includes the above referenced HMAs and areas outside of HMA boundaries where wild horses reside. The area is approximately 640,000 acres in size. Refer to Map 1, which display the HMAs, grazing allotment and the gather area.

#### ***B. Administration of the Contract /Gather Operations***

The National Wild Horse and Burro Gather Contract would be used to conduct the wild horse and burro gather tentatively scheduled for December 2010. BLM personnel would be responsible for overseeing the contract for the capture, care, aging, and temporary holding of wild horses and burros from the capture area. BLM Wild Horse and Burro Specialists would be present during all aspects of the gather activities.

Standard Operating Procedures (SOPs) described within this document would be utilized for the capture and handling of wild horses and burros. SOPs have been developed over time to ensure minimal impacts associated with gathering, handling, and transporting wild horses and burros and collecting herd data.

It is estimated that between 14-16 gather corrals and 3-4 sets of central holding corrals would be necessary to complete the gather. Ideally, gather corrals would be established in areas of previous soil or vegetation disturbance (such as gravel pits, roads etc.), to avoid impacts to unaltered vegetation and soils. A cultural resources investigation would be conducted prior to the construction of gather corrals and temporary holding facilities. Refer to the SOPs, Section H for more detailed information.

A notice of intent to impound would be made public prior to the gather. Branded and/or claimed horses or burros would be transported to a temporary holding facility. Ownership would be determined under the estray laws of the State of Nevada by a Nevada Brand Inspector. Collection of gather fees and any appropriate trespass charges would be collected per BLM policy and regulation.

A veterinarian would be on-call or on-site for the duration of the gather to provide recommendations to Wild Horse and Burro Specialists for care and treatment of sick or injured wild horses or burros. Consultation with the veterinarian may take place prior to the euthanasia of wild horses or burros in accordance with Washington Office Instruction Memorandum (IM 2009-041). Refer to Part II for more information about the euthanasia policy.

Precautions would be taken to ensure that young or weak horse or burros foals are safely gathered and cared for appropriately. If a foal were determined to be an orphan, qualified adopters would be contacted immediately to provide proper care for the foal. Milk replacer formula and electrolytes would be available to care for orphan foals if necessary.

#### ***C. General Overview of Wild Horse Gather Methods***

The gather contractor supplies and transports all equipment needed to conduct a gather to a central location where Holding Corrals are constructed. These corrals consist of six or more pens constructed of sturdy panels, with a central alleyway and working/squeeze chute in the center. Corral panels are covered with snow fencing to keep

---

18. The estimated gather number assumes that 80% of the existing population of 1,083 wild horses would be gathered. This number is dependent upon many factors including animal distribution, terrain, weather etc.

animals calm, and water tanks located within the pens. The central alley and pen arrangement allows the BLM staff and the contractor to sort recently captured animals, separating animals to ship to the adoption facilities, and mares and foals from studs to prevent fighting and injury. The pen arrangement allows the contractor to off-load wild horses from stock trailers into the pens, and facilitates the loading of the horses to be transported to facilities onto large straight deck trucks. Refer to photos 5, 8, and 13 at the end of this Appendix.

At various locations throughout the gather area, smaller sets of gather corrals are constructed called “traps”. The trap or gather corrals consists of a series of pens made out of panels, and “wings” made out of jute netting that funnel wild horses into the corrals as they are captured. Refer to photos 2-3 and 10-13 at the end of this Appendix. Once captured, the horses are loaded into stock trailers and transported to the central Holding Corrals for sorting. Horses may remain in the gather site or on the stock trailer for no time at all, or up to an hour or more while other groups of horses are brought to the gather corrals.

The contractor utilizes a helicopter and pilot to conduct gathers. Use of a helicopter is humane, safe and effective. Methods for use of helicopter are well established, and the contract pilots very skilled. Wild horses settle down once gathered and do not appear to be more than slightly annoyed by the helicopter.

The pilot locates groups of wild horses within the HMA and guides them towards the gather corrals. In most cases, horses are allowed to travel at their own pace, and are not “pushed”. Distances average 4-7 miles over mixed terrain which may consist of rolling foothills, or steeper terrain, drainages, ridges and valley bottoms. The horses often follow their own trails. The pilot and the BLM staff monitor the condition of the horses to ensure their safety, checking for signs of exhaustion, injuries etc. The contractor and pilots are very skilled at designing and building gather corrals, and safely herding the horses to them. Generally, wild horses are very fit, and recover quickly from being captured. Distances that the horses travel are modified to account for summer temperatures, snow depth, animals in weakened condition, young foals, or older/lame animals. Under ideal conditions, some horses could be herded 10 miles or more at the discretion of the COR/Wild Horse and Burro Specialist.

Once near the gather site, the contractor holds a “Prada” horse at the mouth of the wings. As the pilot pushes the wild horses closer, the Prada horse is released, who then runs into the gather corrals, leading all of the wild horses with him. Refer to photos 4, 7, 10, 11, 12 and 14. Crewmembers rush in to secure gates once the horses are within the corrals. Refer to photos 4, and 11. During summer gathers, the crew often separates foals from adults at the gather site so that they may be transported to the Holding Corrals separately and avoids being injured by adult animals. Foals may be loaded into a separate stock trailer where they can have shade, water, and electrolyte if necessary. Once unloaded at the Holding Corrals, foals may be rejoined with the mothers if not old enough to wean, and monitored to ensure that all of the foals “join-up”. Often paint marks are applied to the foals and mothers to assist the contractor and BLM staff in identifying pairs.

Occasionally (and more frequently for difficult to gather areas) helicopter-assisted roping is implemented, in which the pilot moves a small group of horses to the gather area, and the crewmembers rope the animals by horseback. This method often prevents overstressing the wild horses from repeated attempts to move them into the gather corrals. The roped horses are then led to the corrals, to awaiting stock trailers, or immobilized on the ground until they can be loaded into stock trailers.

Once horses are loaded and transported to the Holding Corrals, they are sorted by the contractor’s staff and BLM employees. The contractor looks at the horse’s teeth to estimate age while held in the chute, and the BLM staff documents age, color, body condition and lactation status of the horse. Refer to photo 6. Aging wild horses is a process of estimation due to the type of wear that can occur to the teeth of a wild horse on the range.

Injuries are noted and treated if needed. Once sorted, the wild horses are given hay and unlimited water. During this time, the BLM may consult with a veterinarian to treat sick or injured animals, or make recommendations for euthanasia.

When the pens hold enough animals to transport to the BLM adoption facility, they are loaded into the straight deck trailers that hold 35-45 wild horses depending upon their size. The trailers have three compartments so that

mares, studs and foals can be transported separately. It may require 3-6+ hours for the wild horses to arrive at the adoption preparation facility. The BMDO typically transports wild horses to National Wild Horse and Burro Center at Palomino Valley near Sparks, Nevada; or may ship horses to other facilities if needed.

During sorting, the BLM staff identifies wild horses to be re-released back to the HMA according to the objectives for the herd. Mares may be held until the end of the gather so that fertility control can be given to them to slow future population growth rates. When it is time for the release, the mares and studs are each loaded into separate stock trailers and transported back inside the HMA near water sources. The rear of the trailer is opened up, and the horses are allowed to step off and travel back into the HMA. Sometimes the horses are released directly from the holding corrals if they are centrally located within the HMA. Refer to photos 1, 9 and 15.

Before the wild horses are transported to adoption facilities or released, hair is sampled for genetic testing. Data collected during the gather in conjunction with genetic analysis report will be incorporated into a Herd Management Area Plan (HMAP) in the future.

#### ***F. Data Collection***

Wild Horse and Burro Specialists (WHB Specialists) would be responsible for collecting population data. The extent to which data is collected may vary among the field offices to meet specific needs pertaining to each HMA.

##### **1) Hair Samples/Genetics Analysis**

Hair samples would not be collected during this proposed gather as genetics analysis was done following the previous gather and the results do not indicate that re-sampling is necessary at this time.

##### **2) Herd Health and Viability Data Collection**

WHB Specialists would document information related to age, sex, color, overall health, pregnancy, or nursing status from each animal captured. An estimate of the number of wild 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.

##### **3) Fertility Control Data**

Age, body condition and lactation status (if known) would be determined for any freezemarked mares that are captured that were given fertility control during the previous gathers. This information would be used to document animal health, and re-capture/capture efficiency, and any inferences to animal movement if it could be determined.

##### **4) Characteristics**

WHB Specialists would record color and size of the animals, and any characteristics as to type would be noted, if determined. Any incidence of negative genetic traits (parrot mouth, club foot etc.) or other abnormalities would be noted as well.

##### **5) Condition Class**

A body condition class score would be recorded based on the Henneke System. This would be recorded for the population in general and/or for specific animals if necessary.

#### ***H. Euthanasia***

The Authorized Office (or designee) will make decisions regarding euthanasia, in accordance with BLM policy as expressed in Washington Office Instructional Memorandum No. 2009-041. A veterinarian may be called to make a diagnosis and final determination. Euthanasia shall be done by the most humane method available. Authority for humane euthanasia of wild horses is provided by the Wild Free-Roaming Horses and Burros Act of 1971, Section 3(b)(2)(A), 43 CFR 4730.1, BLM Manual 4730 - Euthanasia of Wild horses and Burros and Disposal of Remains. The following are excerpted from IM 2009-41:

*A Bureau of Land Management (BLM) authorized officer may authorize the euthanasia of a wild horse or Burro in field situations (includes free-roaming horses and burros encountered during gather operations) as well as short- and long-term wild horse and Burro holding facilities with any of the following conditions:*

- (1) Displays a hopeless prognosis for life;*
- (2) suffers from a chronic or incurable disease, injury or serious physical defect; (includes severe tooth loss or wear, severe club feet, and other severe acquired or congenital abnormalities)*
- (3) would require continuous treatment for the relief of pain and suffering in a domestic setting;*
- (4) is incapable of maintaining a Henneke body condition score greater than two, in its present environment;*
- (5) has an acute or chronic injury, physical defect or lameness that would not allow the animal to live and interact with other horses or burros, keep up with its peers or exhibit behaviors which may be considered essential for an acceptable quality of life constantly or for the foreseeable future;*
- (6) suffers an acute or chronic infectious disease where State or Federal animal health officials order the humane destruction of the animal as a disease control measure.*

*There are three circumstances where the authority for euthanasia would be applied in a field situation:*

*(A) If an animal suffers from a condition as described in 1-6 above that causes acute pain or suffering and immediate euthanasia would be an act of mercy, the authorized officer has the authority and the obligation to promptly euthanize the animal. If the animal is euthanized during a gather operation, the authorized officer will describe the animal's condition and report the action using the gather report in the comment section that summarizes gather operations (See attachment 1). If the euthanasia is performed during routine monitoring, the Field Manager will be notified of the incident as soon as practical after returning from the field.*

*(B) Older wild horses and burros encountered during gather operations should be released if, in the opinion of the authorized officer, the criteria described in 1-6 above for euthanasia do not apply, but the animals would not tolerate the stress of transportation, adoption preparation, or holding and may survive if returned to the range. This may include older animals with significant tooth wear or tooth loss that have a Henneke body condition score greater than two. However, if the authorized officer has inspected the animal's teeth and feels the animal's quality of life will suffer and include health problems due to dental abnormalities, significant tooth wear or tooth loss; the animal should be euthanized as an act of mercy.*

*(C) If an animal suffers from any of the conditions listed in 1-6 above, but is not in acute pain, the authorized officer has the authority to euthanize the animal in a humane manner. The authorized officer will prepare a written statement documenting the action taken, and notify the Field Manager and State Office Wild Horse and Burro (WH&B) Program Lead. If available, consultation and advice from a veterinarian is recommended, especially where significant numbers of wild horses or burros are involved.*

## **I. Special Stipulations**

- 1)** Private landowners or the proper administering agency(s) would be contacted and authorization obtained prior to setting up gather corrals on any lands which are not administered by BLM. Wherever possible, gather corrals would be constructed in such a manner as to not block vehicular access on existing roads.
- 2)** Gather corrals would be constructed so that no riparian vegetation is contained within them. No vehicles would be operated on riparian vegetation or on saturated soils associated with riparian/wetland areas.

- 3) The helicopter would avoid eagles and other raptors, and would not be flown repeatedly over any identified active raptor nests. No unnecessary flying would occur over big game on their winter ranges or active fawning/calving grounds during the period of use.
- 4) Standard operating procedures in the site establishment and construction of gather corrals will avoid adverse impacts from gather corrals, construction, or operation to wildlife species, including threatened, endangered, or sensitive species.
- 5) Archeological clearance by a BLM archaeologist or District Archeology Technician of gather corrals, holding corrals, and areas of potential effects would occur prior to construction of gather corrals and holding corrals. If cultural resources were encountered, those locations would not be utilized unless they could be modified to avoid impacts. Due to the inherent nature of wild horse gathers, gather corrals and holding corrals would be identified just prior to use in the field. As a result, Cultural Resource staff would coordinate with Wild Horse and Burro personnel to inventory proposed locations as they are identified, and complete required documentation.
- 6) Wildlife stipulations  
The following stipulations would be applied as appropriate.
  - a. Sage Grouse
    - i. Avoid active leks (strutting grounds) by 2 miles. March 1- May 15
    - ii. Avoid nesting and brood rearing areas (especially riparian areas where broods concentrate beginning usually in June) by 2 miles. April 1 – August 15
    - iii. Avoid sage grouse wintering areas by 2 miles while occupied. Most known wintering grounds in the Shoshone-Eureka Resource Area occur at high elevations and are not likely to be affected. Dates vary with severity of winter
    - iv. Minimize and mitigate disturbance to the vegetation in all known sage grouse habitat.
  - b. Ferruginous Hawk: Avoid active nests by 2 miles. March 15- July 1.

## II. Standard Operating Procedures for Wild Horse and Horse Gathers

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

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

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

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

1. Helicopter Assisted Trapping. This capture method involves utilizing a helicopter to direct wild horses or burros into a temporary corral.

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

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

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

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

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

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

6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or mares with small foals, sick and injured animals, estrays, or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite gather corrals, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.
7. The Contractor shall provide animals held in the gather corrals and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the gather corrals or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. An animal that is held at a temporary holding facility through the night is defined as a horse/burro feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
8. It is the responsibility of the Contractor to provide security to prevent loss, injury, or death of captured animals until delivery to final destination.
9. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.
10. Animals shall be transported to final their destination from temporary holding facilities within 24 hours after capture unless prior approval is granted by the COR/PI for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR/PI. Animals shall not be held in gather corrals and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR/PI. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the capture area may need to be transported back to the original gather site. This determination will be at the discretion of the COR.

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

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary gather corral. If the contractor selects this method the following applies:
  - a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.
  - b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.
  - c. Gather corrals shall be checked a minimum of once every 10 hours.
2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:

- a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one half hour.
- b. The contractor shall assure that foals shall not be left behind, and orphaned.
3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor with the approval of the COR/PI selects this method the following applies:
  - a. Under no circumstances shall animals be tied down for more than one half hour.
  - b. The contractor shall assure that foals shall not be left behind, or orphaned.
  - c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

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

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

4 square feet per burro foal (.50 linear feet in an 8 foot wide trailer).

7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.
8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

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

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.
  - a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.
  - b. The Contractor shall obtain the necessary FCC licenses for the radio system
  - c. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.
2. Should the contractor choose to utilize a helicopter the following will apply:
  - a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.
  - b. Fueling operations shall not take place within 1,000 feet of animals.

#### ***E. Site Clearances***

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

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

#### ***G. Public Participation***

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

handle the animals. The general public may not enter the corrals or directly handle the animals at anytime or for any reason during BLM operations.

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

The Contracting Officer's Representatives (CORs) and the project inspectors (PIs) have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. Shawna Richardson, Wild Horse and Burro Specialist would serve as the primary COR. Alternate COR and PI(s) would be selected prior to the start of the gather. Duane Crimmins, Supervisory Natural Resources Lead and Doug Furtado, Field Manager, MLFO will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, State Office, National Program Office, and BLM Holding Facility offices. All employees involved in the gather operations will keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries will be handled through the Nevada State Office and Battle Mountain District Office Public Affairs Officer. These individuals will be the primary contact and will coordinate with the COR on any inquiries.

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

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

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



*Sorrel pinto mare gathered as a two year old from Callaghan HMA in 2002. She and her mother (to the left) were both re-released to the HMA.*



*The mare was gathered again in January 2009. She was selected to be released again.*



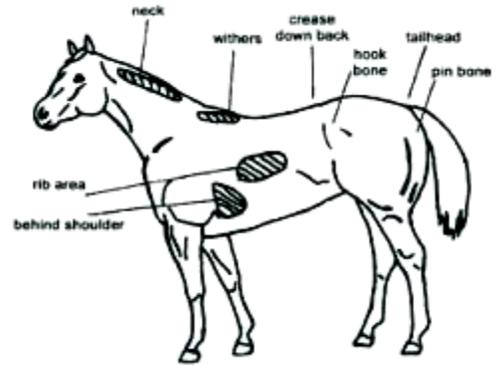
*Here she is awaiting her fertility control in the alley way.*



*Once released the mare (far left) and her friends didn't want to leave and spent some time cleaning up the hay outside of the pens before trotting off.*

### Henneke Equine Body Condition Scoring System

The Henneke Body Condition Score System was developed by Don Henneke, PhD, in 1983. The Henneke Chart is a standardized scoring system, and is a scientific method of evaluating a horse's body condition regardless of breed, body type, sex or age.



modified from Henneke et al. EVJ 1983;15:371-372

Condition	Neck	Withers	Shoulder	Ribs	Back	Tailhead Area
<b>1 Poor (extremely emaciated)</b>	Bone structure easily noticeable	Bone structure easily noticeable	Bone structure easily noticeable	Ribs projecting prominently	Spinous processes projecting prominently	Tailhead, pinbones, and hook bones projecting prominently
No fatty tissue can be felt						
<b>2 Very Thin (emaciated)</b>	Bone structure faintly discernible	Bone structure faintly discernible	Bone structure faintly discernible	Ribs prominent	Slight fat covering over base of spinous processes. Transverse processes of lumbar vertebrae feel rounded. Spinous processes are prominent	Tailhead prominent Pin bones prominent Hook bones prominent
<b>3 Thin</b>	Neck accentuated	Withers accentuated	Shoulder accentuated	Slight fat cover over ribs. Ribs easily discernible	Fat buildup halfway on spinous processes, but easily discernible. Traverse processes cannot be felt	Tailhead prominent but individual vertebrae cannot be visually identified. Hook bones appear rounded, but are still easily discernible. Pin bones not distinguishable
<b>4 Moderately Thin</b>	Neck not obviously thin	Withers not obviously thin	Shoulder not obviously thin	Faint outline of ribs discernible	Negative crease (peaked appearance) along back	Prominence depends on conformation. Fat can be felt. Hook bones not discernible
<b>5 Moderate</b>	Neck blends smoothly into body	Withers rounded over spinous processes	Shoulder blends smoothly into body	Ribs cannot be visually distinguished, but can be easily felt	Back is level	Fat around tailhead beginning to feel spongy
<b>6 Moderately Fleshy</b>	Fat beginning to be deposited	Fat beginning to be deposited	Fat beginning to be deposited behind shoulder	Fat over ribs feels spongy	May have a slight positive crease (a groove) down back	Fat around tailhead feels soft
<b>7 Fleshy</b>	Fat deposited along neck	Fat deposited along withers	Fat deposited behind shoulder	Individual ribs can be felt, but noticeable fat filling between ribs	May have a positive crease down the back	Fat around tailhead is soft
<b>8 Fat</b>	Noticeable thickening of neck	Area along withers filled with fat	Area behind shoulder filled with fat	Difficult to feel ribs	Positive crease down the back	Fat around tailhead very soft
<b>9 Extremely Fat</b>	Bulging fat	Bulging fat	Bulging fat	Patchy fat appearing over ribs	Obvious crease down the back Flank filled with fat	Bulging fat around tailhead

## Photos

The following pages of photos are provided to show examples of the various aspects of wild horse gathers completed by the BLM, MLFO and TFO.



1. Young foal safely released with its mother back to the Fish Creek HMA, February 2006.



2 and 3. Augusta Mountains Gather, November 2007. View of trap corrals and wings.



4. Augusta Mountains Gather, November 2007. Prada horse leads the wild horses into the mouth of the trap. Crew stands by to secure gates.



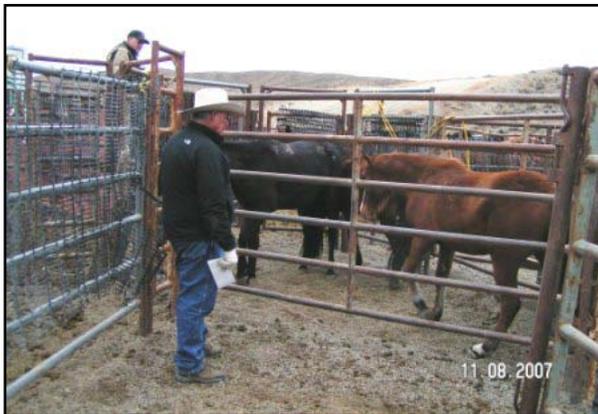
5. New Pass/Ravenswood Gather, November 2007. Mares settle in at the Holding Corrals and enjoy some hay.



6. New Pass/Ravenswood Gather, November 2007. The contractor and crew estimate the age of a horse in the working chute.



7. The “Judas” or “prada” horse on the far left is released ahead of the group of horses and then leads them into the jute wings of the trap corrals (photo on the right)



8. New Pass/Ravenswood Gather, November 2007. The Brand Inspector checks the horses for possible brands before transport to the BLM WHB facilities.



9. New Pass/Ravenswood Gather, November 2007. Release of the horses back to the range at a water location within the HMA.



10. A gather crew member holds the prada or Judas horse inside the wings, waiting for the helicopter to push the horses into the mouth of the wings. As soon as the wild horses see the parade horse, the crew member releases him.



11. The prada horse (sorrel in the front) gallops into the trap corrals and leads the group of wild horses into the corrals. The helicopter is not far behind to make sure that none of the horses turn back. Crew members stand by to rush in and close the gates behind the horses.



12. South Shoshone HMA Gather, January 2008. The wild horses are funneled around the gravel pit and into the gather corrals.



13. South Shoshone HMA Gather, January 2008. Holding Corrals.

14. Prada horse leads in a group of horses during the New Pass/Ravenswood HMA gather November 2007.



15. Studs released back to the Austin side of the Callaghan HMA, December 2008.

16. South Shoshone HMA Gather, January 2008. Release mares in the Holding Corrals on a foggy morning.

**Appendix B: Herd Management Area Background Information**

**Genetic Analysis**

Hair samples were collected from all four HMAs during the most recent gathers and analyzed for genetic variability. The reports were received spring and summer 2010. The following table includes discussion provided from Dr. Gus Cothran of Texas A&M University on the hair samples provided following the previous gathers and the analysis of the genetics for these herds. The table includes pertinent excerpts from the reports.

**Table 1. Results of Genetics Analysis**

HMA/Area	Genetic Variants	Genetic Variation	Genetic Similarity (Domestic)	Genetic Similarity (Feral)
Callaghan (East/Grass Valley Allotment)	93 – Near the highest number yet observed in feral herds.	Well above the feral mean. Results suggest recent mixing with other herds.	Similarity to domestic breeds is above average. Similarity to Old World Iberian, Light Racing, Oriental and Old Spanish Breeds.	Most similar to the same area sampled in 2002 and Callaghan (West/Austin Allotment) and Bald Mountain HMA
	Summary/Recommendations: Genetic variability of this herd is high with measures of both individual and population diversity quite high. There is virtually no change in variation levels from 2002. Results suggest a herd with mixed ancestry that primarily is North American but possibly some Spanish influence. There appears to be mixing of this herd with other nearby herds and these herds show close similarity to each other. Current variability levels are high enough that no action is needed at this point and with the possibility of genetic exchange among several herds there should be no loss of variation for several generations.			
Callaghan (West/Austin Allotment)	87 -- Very high number in a feral herd and is well above the mean for domestic breeds.	Slightly below that seen for the Callaghan East herd but still quite high.	Similarity to domestic breeds is about average for feral herds. Similarity to Light Racing and Riding breeds. Results indicate a population with mixed origins.	Most similar to the same area sampled in 2002 and Callaghan (East/Grass Valley Allotment) and Bald Mountain HMA
	Summary/Recommendations: Genetic variability of this herd is high and has changed little since 2002. The values related to allelic diversity are high and almost the same as seen in 2002 while heterozygosity (genetic variation) is higher than in 2002. Genetic similarity results suggest a herd with highly mixed ancestry. Current variability levels are high enough that no action is needed and due to the apparent continued mixing of this herd with other populations in the area the genetic variation should remain good.			
Bald Mountain	91 -- A very high value.	Well above the feral mean. Results consistent with population mixing.	Similarity to domestic breeds is about average. Highest similarity to Light Racing and Riding breeds. Close relationship to Oriental breeds. Results indicate mixed origin.	Bald Mountain fits most closely with Callaghan HMA.
	Summary/Recommendations: Genetic variability of this herd is high which is true for other herds from this region. Genetic similarity results suggest a herd with mixed ancestry. The variation results plus the fairly close relationship among herds from this region indicates that these herds likely interbreed. Current variability levels are high enough that no action is needed at this point and the evidence of cross breeding with other neighboring herds should maintain a high effective population size.			
Rocky Hills	88 -- Well above the mean for feral herds and for domestic breeds.	High. Results suggest some past and possibly recent mixing with horses from a different population.	Similarity to domestic breeds is above average. Highest similarity to Light Racing and Riding breeds.	The Rocky Hills herd does not pair with any specific HMA but fits in the middle of several herds.
	Summary/Recommendations: The HMA herd does not fit in with any domestic horse cluster			

HMA/Area	Genetic Variants	Genetic Variation	Genetic Similarity (Domestic)	Genetic Similarity (Feral)
	and, in fact, is at the extreme outside of the dendrogram. This is probably an indication of a high degree of genetic mixture. Genetic variability is high and this appears to be due to genetic mixing with another population(s). The values related to allelic diversity are especially high while heterozygosity is also well above average. Genetic similarity results suggest a herd with mixed ancestry that but what that ancestry might be is not clear. This herd is quite divergent from all domestic breeds it was compared to in the cluster analysis. Current variability levels are high enough that no action is needed at this point. If there is regular crossing of this herd with one or more other herds, high genetic variation is likely to be maintained.			
New Pass/Ravenswood	89 – High for feral herds and well above the mean for domestic breeds.	Well above the feral mean and the domestic horse mean.	Similarity to domestic breeds was relatively high for a feral herd. Highest similarity to Light Racing and Riding Breeds, and North American Gaited Breeds. Close to the Morgan Horse.	Most similar to Saulsbury followed by Callaghan (West/Austin Allotment).
	Genetic variability of this herd is high. The high variability, particularly the high allelic diversity could be indicative of breeding with trespass horses that were reported in the information received with the samples. However, the data indicates a herd in genetic equilibrium, which would not be expected in a mixed population that included animals with a long history on the HMA and other, unrelated animals. Individual genotypes do not show any individual horse that is clearly different from others. However, if there has been interbreeding for a couple of generations or more, the results seen would be possible. Genetic similarity results suggest a herd with mixed ancestry that primarily is North American. Current variability levels are high enough that no action is needed at this point and the fairly large population size is good so there is little immediate threat to variation levels.			

**Recent Gather History**

Between December 12 and January 22, the MLFO gathered the Callaghan Complex, comprised of the Callaghan, Bald Mountain and Rocky Hills HMAs. The areas were highly overpopulated and near emergency conditions existed within the Callaghan and Bald Mountain HMAs. Refer to Section 3.3 for gather figures and results. Throughout the gather of Callaghan and Bald Mountain HMAs, thin wild horses were captured with little reserves to carry them through the winter. These two HMAs were 5-7 times over the established AMLs, and with the area receiving less than 50% of the normal precipitation by the end of October, forage and water became very limiting for this large population.

In general, most mares were Body Condition Score (BCS) of thin to moderately thin, with backbone, shoulders and withers accentuated. Many of these mares supported large, older foals that were still suckling, further draining their resources. Ribs and backbone could be felt on most foals regardless of size. Some of the 3-4 year old mares and studs were the worst in body condition and overall health.

Not all animals were in poor condition or health. In many cases, the larger percentage of studs were moderately thin to moderate, and appeared to have more body reserves and body muscling than the mares. Some pockets of healthy horses in moderate or higher body condition were captured from both HMAs. These animals represented less than 20-25% of the population. Overall, the horses captured from the Bald Mountain and Callaghan HMAs were weak, and the gather pilot had to bring the animals to the trap sites slow and easy.

If the gather had not been conducted, wild horses on the Callaghan HMA would likely have been in serious distress by the end of January. A large portion of the population (40-50%) would likely have died, comprised mostly of foals and mares. The Bald Mountain HMA would have fared a little better, with an expected 20-30% death rate comprised mostly of older mares and studs, foals, and 3-4 year old mares and studs.

## Callaghan

Animal condition within the west side of the HMA was predominately thin to moderately thin, especially in the northern portion where wild horse concentrations were highest. The back bones and ribs were accentuated on most mares. Overall, the studs were better condition, but most were BCS 4. The overall appearance of these horses was that they had no reserves and minimal muscling. Older foals were still suckling on the mares, drawing them down in body condition further.

Yellow discharge was observed from the noses of numerous horses (2-5%) gathered from the west side of the HMA, affecting horses of all ages and condition classes (not specific to thinner, younger or older horses). Nasal swabs were taken from some of the affected horses transported to PVC in which the cultures isolated two (heavy level) positive results for *Streptococcus Zooepidemicus* and one (low level) positive result for *Staphylococcus*. The PVC Veterinarian reported that Strep Zo is the non-strangles form of Strep and fairly normal to have this form of upper respiratory infection this time of year. This infection is very treatable with antibiotics if need be. The staph could have been related to some sort of skin disorder and the Veterinarian did not see anything to be alarmed about.

The body condition of the horses captured on the east side of the HMA was similar to that on the west side – thin and moderately thin horses. The horses captured from the Cowboy Rest trap in the northeast portion of the HMA were some of the thinnest horses captured during the whole gather -- many estimated to be BCS 3 – with spines and hip bones accentuated (even some studs). Many of the horses had overall un-thrifty appearance with shaggy haircoats. It was noted that several horses had the appearance of tails that had been chewed on. The horses gathered were of mixed condition and some healthier, well muscled larger horses were captured. The following photos depict the body condition of the wild horses gathered from the Callaghan HMA in 2008/2009.



1



2



3



4



5



6

Photo 1: Wild horses recently gathered into the holding corrals which also served as the gather corrals. The prada horse is in the far background, which gives a size/condition comparison.

Photo 2, 3 and 5: recently gathered horses in the gather corrals. Note the accentuated hips, ribs and backbones of some horses.

Photo 4. Prada horse in the foreground. This young foal was small and unthrifty because the mother was thin and had poor milk production. The foal was eventually fostered by a local family due to it's weak state.

Photo 6: Wild horse in the alleyway leading into the working chute. Note the accentuated hips and backbone.

Because of the condition of the horses, and the sheer number of horses that had to be removed to achieve AML, the choice of animals to remove and to re-release was not based solely on age but also on body condition. 92% of the population needed to be removed in order to meet the gather objectives. Selection for horses to release back to the range for the Callaghan HMA focused on health with the horses in BCS 4.5 or higher and good muscling being chosen as a high priority regardless of age. Second priority was overall body size and conformation, followed by historic color traits. All weanling and yearlings were transported to BLM facilities to be prepared for adoption and 95-98% of two and three year olds. The age groups of the rest of the horses removed from the range varied. As shown in the following tables and charts, the age structure of the wild horses gathered reflects a very low amount of wild horses over the age of 15 years.

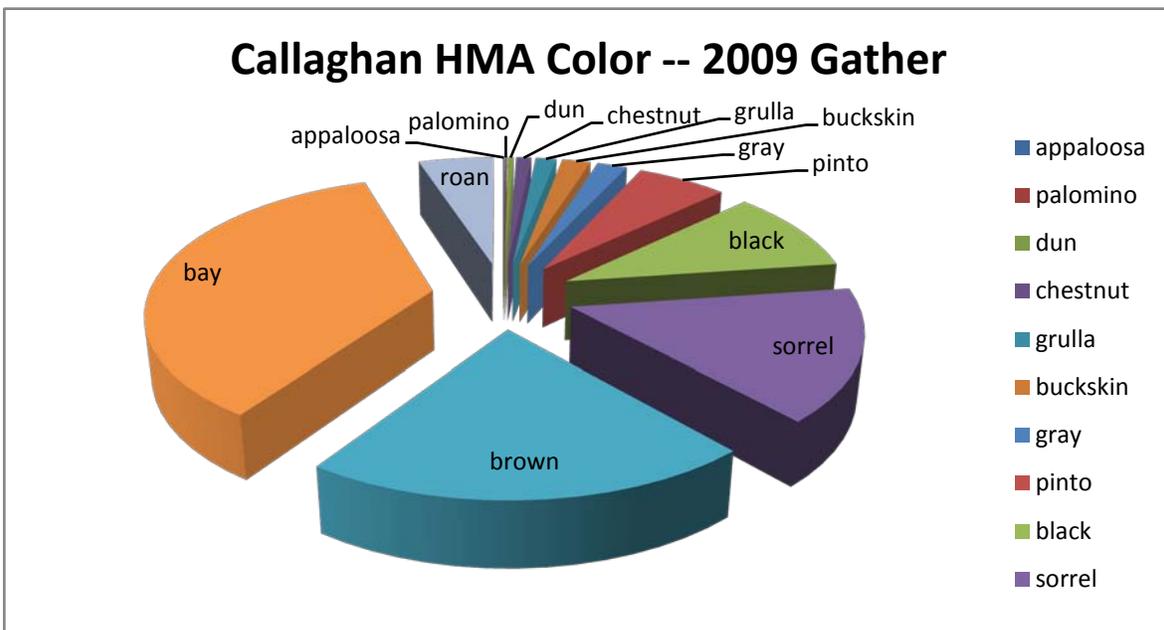
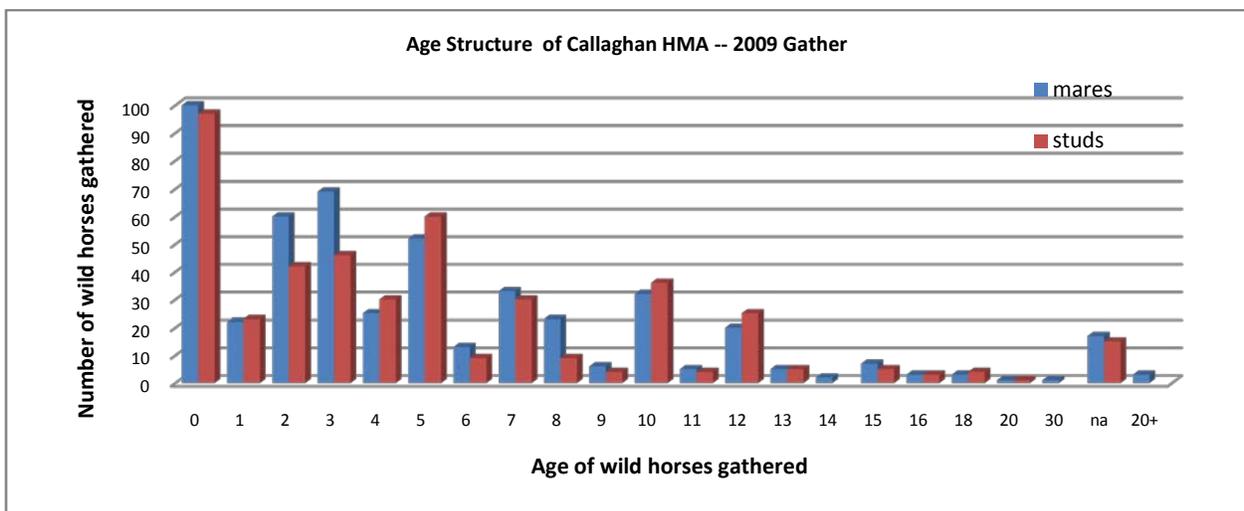
The age structure and sex ratios of the horses gathered is displayed within the tables and charts below.

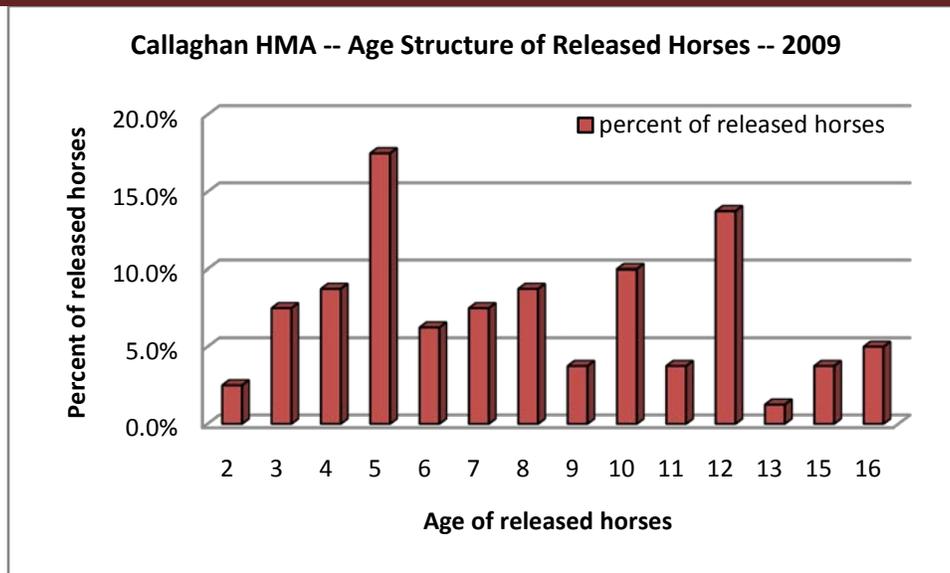
**Table 2. Callaghan HMA Age Structure<sup>19</sup>**

Age	Captured				Released			
	Mare	Stud	Total	%	Mare	Stud	Total	%
0	100	97	197	20.7%	-	-	-	-
1	22	23	45	4.7%	-	-	-	-
2	60	42	102	10.7%	1	1	2	3%
3	69	46	115	12.1%	3	3	6	8%
4	25	30	55	5.8%	4	3	7	9%
5	52	60	112	11.8%	7	7	14	18%
6	13	9	22	2.3%	1	4	5	6%
7	33	30	63	6.6%	1	5	6	8%
8	23	9	33	3.5%	5	2	7	9%
9	6	4	10	1.1%	2	1	3	4%
10	32	36	68	7.2%	5	3	8	10%
11	5	4	9	0.9%	2	1	3	4%

19. Includes animals captured from USFS, and outside of the HMA as well as within the Callaghan HMA.

Age	Captured				Released			
	Mare	Stud	Total	%	Mare	Stud	Total	%
12	20	25	45	4.7%	5	6	11	14%
13	5	5	10	1.1%	-	1	1	1%
14	2		2	0.2%	1	2	3	4%
15	7	5	12	1.3%	3	1	4	5%
16	3	3	6	0.6%	-	-	-	-
18	3	4	7	0.7%	-	-	-	-
20	1	1	2	0.2%	-	-	-	-
30	1		1	0.1%	-	-	-	-
na	17	15	32	3.4%	-	-	-	-
20+	3		3	0.3%	-	-	-	-
	<b>401</b>	<b>448</b>	<b>951</b>	<b>100.0%</b>	<b>40</b>	<b>40</b>	<b>80</b>	<b>100%</b>





### Bald Mountain

Animal condition throughout the HMA was variable. Horses gathered on the east side of the HMA (where concentrations were highest and resources most limited) were in the poorest condition similar to the condition of the Callaghan HMA horses. Most horses were estimated to be in BCS 4 or under. Few horses (mostly studs) were considered to be in good condition or well muscled. Most mares showed accentuated backbone and ribs. All age groups were represented within the horses captured, and no specific age group in better or worse condition than any other.

Within the central portion of the HMA, approximately 40-50% of the horses were thin, with estimated BCS 3.5-4.0.; the remaining animals were healthy, well muscled and BCS 4.5-5.0. Most foals were large and healthy.

Contrary to the Callaghan HMA gather, several older (25-30 year old) horses were gathered from Bald Mountain HMA. Forty-four of the 609 horses captured (7.2%) were 15 years of age or older. The following photos are from the Bald Mountain HMA gather in 2009.



1



2



3



4

Photo 1: Wild horses being gathered from the Bald Mountain HMA.

Photo 2: Release mares at the holding facilities.

Photo 3: Studs being released back to the HMA.

Photo 4; Mares being released back to the HMA.

Selection for horses to release back to the range focused on horses 4 years of age and older. Due to the sheer number of horses needed to remove to achieve low AML, wild horses of all ages were chosen for removal. A total of 84% of the wild horses needed to be removed to meet the gather objectives.

100% of all weanlings, yearlings and two-year olds were transported to BLM facilities for adoption, and 94% of three year olds. Numbers of other age groupings removed from the range varied. One of the priorities for release horses selected was health. Poor, thin or less thrifty horses were not selected for release.

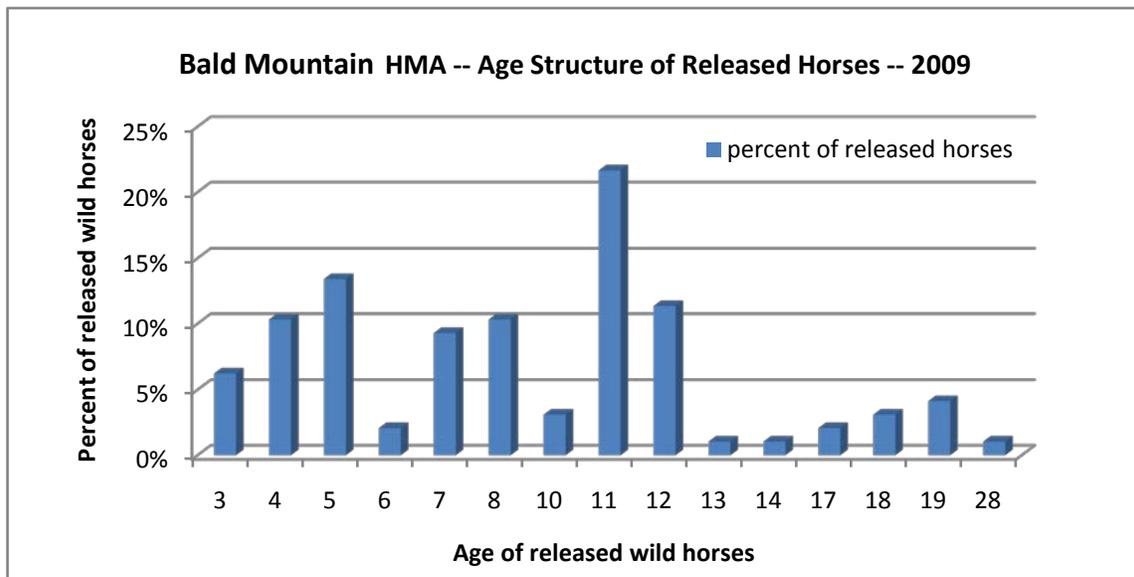
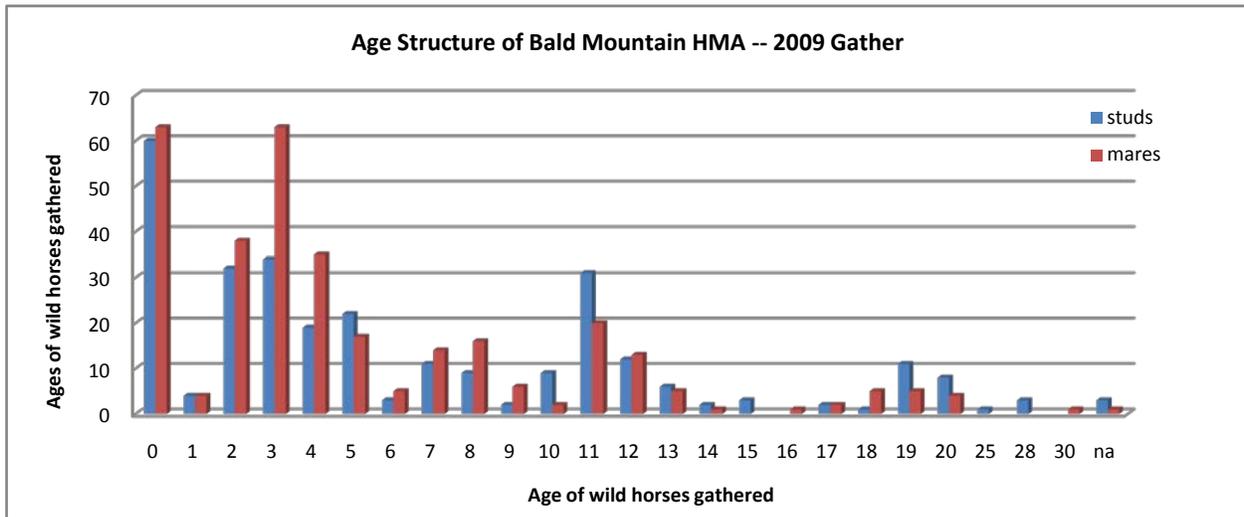
Since this was the first gather since 1981, little knowledge existed about the historical traits of the herd. Many large draft (Belgian) influenced grey horses were gathered from the central portion of the HMA. Other traits included many frosted type horses with splashed white faces, roaning on the chest and flanks, and high white stockings. Several paint horses were captured which result from the close proximity to Callaghan HMA.

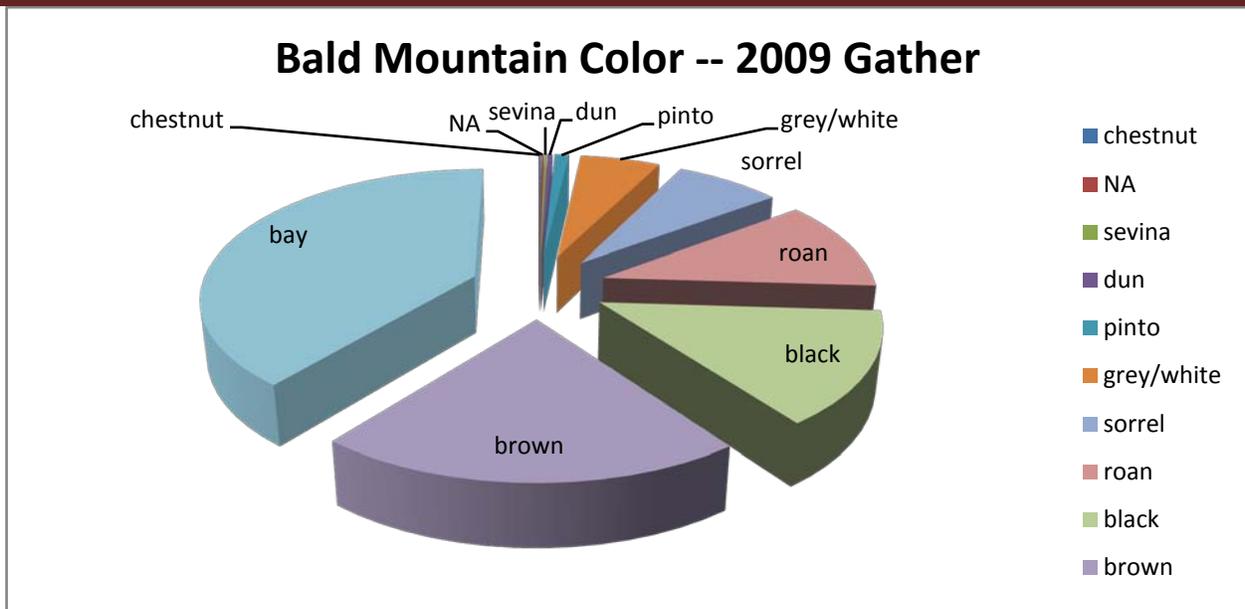
**Table 3: Bald Mountain Age Structure**

Age	Captured				Released			
	Mare	Stud	Total	%	Mare	Stud	Total	%
0	63	60	123	20.2%	-	-	-	-
1	4	4	8	1.3%	-	-	-	-
2	38	32	70	11.5%	-	-	-	-
3	63	34	97	15.9%	6		6	6%
4	35	19	54	8.9%	6	4	10	10%
5	17	22	39	6.4%	8	5	13	13%
6	5	3	8	1.3%	1	1	2	2%
7	14	11	25	4.1%	6	3	9	9%
8	16	9	25	4.1%	7	3	10	10%
9	6	2	8	1.3%	-	-	-	-
10	2	9	11	1.8%	1	2	3	3%
11	20	31	51	8.4%	6	15	21	22%
12	13	12	25	4.1%	3	8	11	11%
13	5	6	11	1.8%		1	1	1%
14	1	2	3	0.5%		1	1	1%

15	-	3	3	0.5%	-	-	-	-
16	1	-	1	0.2%	-	-	-	--
17	2	2	4	0.7%	1		2	2%
18	5	1	6	1.0%	3		3	3%
19	5	11	16	2.6%	1	3	4	4%
20	4	8	12	2.0%	-	-	-	-
25	-	1	1	0.2%				
28	-	3	3	0.5%	-	1	1	1%
30*	1	-	1	0.2%	-	-	-	-
na	1	3	4	0.7%	-	-	-	-
<b>Total</b>	<b>321</b>	<b>288</b>	<b>609</b>	<b>100.0%</b>	<b>49</b>	<b>48</b>	<b>97</b>	<b>100</b>

\*The 30 year old was a private mule claimed by its owner.

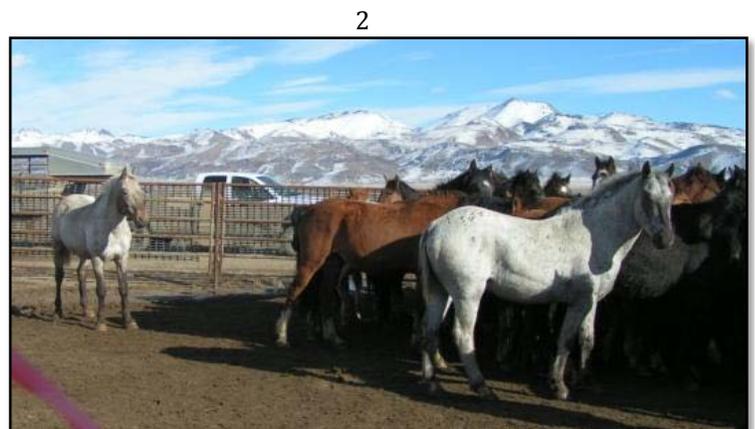
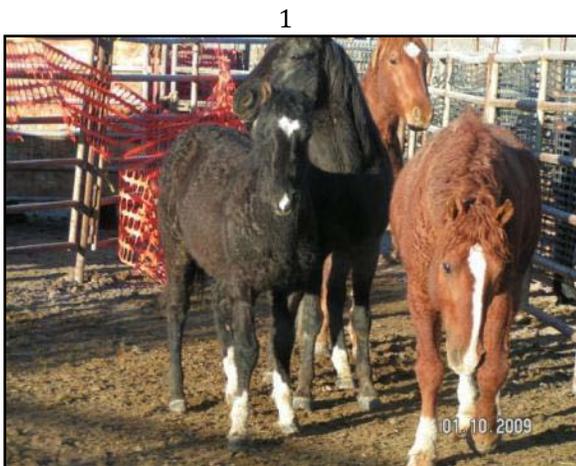




### Rocky Hills HMA

The Rocky Hills HMA horses were in very good body condition (as, this herd is limited by water, not feed), with most horses estimated at BCS 4.5-5+. There were a few of the older (25-30 years of age) horses that were thin. In contrast to the gather of the Callaghan HMA, numerous “older” horses that were 15 years and older (18, 20, 25, 30, etc.) were gathered. These age groups are part of a normal age structure, and were missing for the Callaghan HMA. Nineteen of the 145 horses captured (13%) were 15 years of age or older. Many of the horses previously released back to the HMA in 2002 were captured and were in good health.

Initial WinEquus population modeling prior to the gather indicated that horses 2 years of age and younger could be able to be removed, and low AML achieved on the HMA, allowing for the release of horses 3 years of age and older. As the sorting of captured horses began, it became apparent that there were many horses 3 years of age and older (more than anticipated). The removal objectives were modified slightly, and about half of the horses 3 years of age and a few horses 4 years of age were shipped to PVC for adoption. Only a few horses (about 5) 5 years old or older were shipped to PVC, thereby minimizing the number of horses that may go to long term holding pastures. 56% of the horses gathered were removed.



3



4



5



6



Photo 1: "Fishy" the curly horse with his son "Blackfish". Fishy was re-released and Blackfish was transported to adoption facilities and later adopted by a curly horse enthusiast/researcher.

Photo 2 and 3: Wild horses from the Rocky Hills HMA in the corrals awaiting sorting.

Photo 4 and 5: Release of Rocky Hills studs back to the HMA.

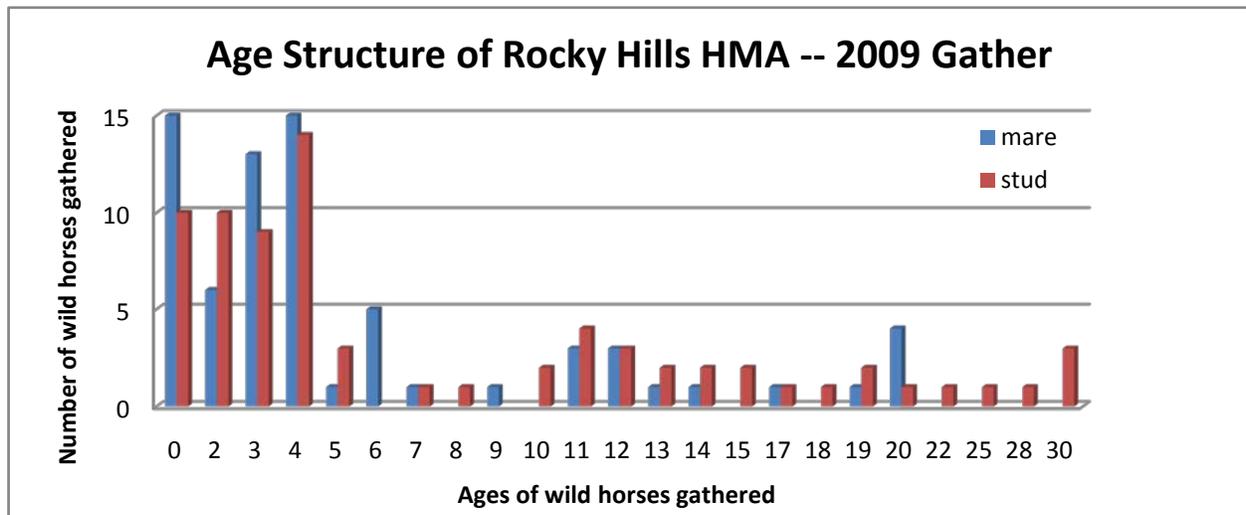
Photo 6: Recently released mares waste no time and begin to graze once back in the HMA.

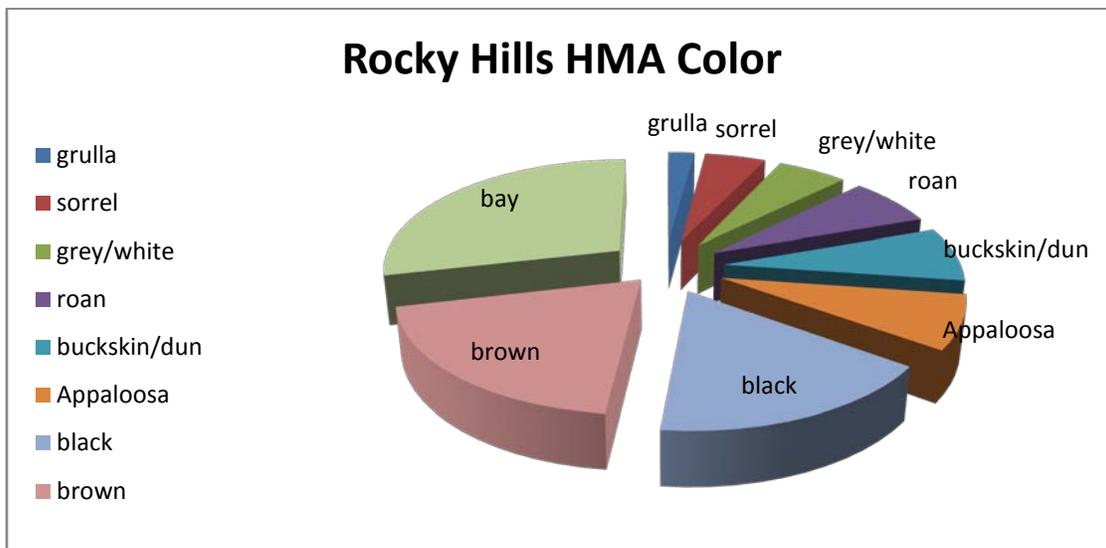
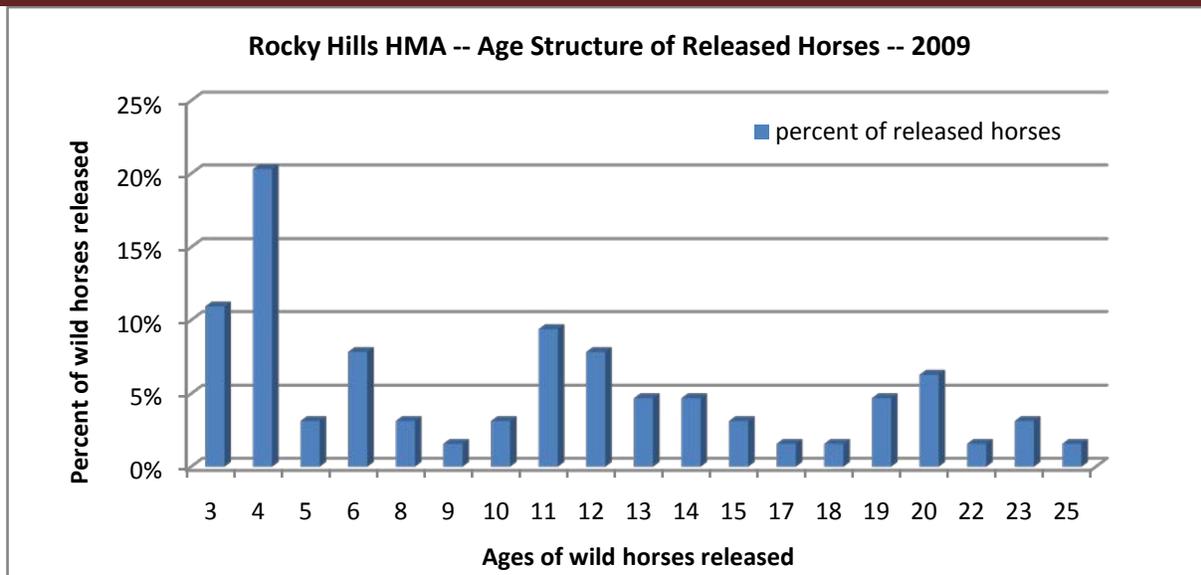
The Rocky Hills HMA horses were very healthy, with all age groups represented, and a larger than expected proportion of older horses. The horses were concentrated as expected near the primary water sources, requiring only two days to gather 145 horses into one trap. Food is not limiting in this HMA. Water sources are limiting, which has caused distribution concentrations, and resulting impacts to the forage resources in these areas. If this HMA had not been gathered, these forage resources would have taken a substantial hit the following summer. Water sources may have not been adequate and water hauling would have been required. Because the population was gathered when the AML was not seriously exceeded (~116%), fewer older (unadoptable) horses had to be removed from the range that may have needed to be cared for in long-term holding pastures. Most horses removed and shipped to PVC were 4 years of age or younger.

**Table 4. Rocky Hills Age Structure**

Age	Captured				Released			
	Mare	Stud	Total	Percent	Mare	Stud	Total	Percent
1	15	10	25	17.2%	-	-	-	-
2	6	10	16	11.0%	-	-	-	-
3	13	9	22	15.2%	4	3	7	11%
4	15	14	29	20.0%	9	4	13	20%
5	1	3	4	2.8%	-	2	2	3%

Age	Captured				Released			
	Mare	Stud	Total	Percent	Mare	Stud	Total	Percent
6	5		5	3.4%	5		5	8%
7	1	1	2	1.4%	-	-	-	-
8	-	1	1	0.7%		2	2	3%
9	1		1	0.7%	1		1	2%
10	-	2	2	1.4%		2	2	3%
11	3	4	7	4.8%	2	4	6	9%
12	3	3	6	4.1%	2	3	5	8%
13	1	2	3	2.1%	2	1	3	5%
14	1	2	3	2.1%	1	2	3	5%
15	-	2	2	1.4%		2	2	3%
16	-	-	-	-	-	-	-	-
17	1	1	2	1.4%	1	-	1	2%
18	-	1	1	0.7%		1	1	2%
19	1	2	3	2.1%	1	2	3	2%
20	3	1	4	2.8%	3	1	4	5%
22	-	1	1	0.7%		1	1	6%
23	1		1	0.7%	1	-	1	2%
25	-	1	1	0.7%	-	1	1	2%
28	-	1	1	0.7%	-	1	1	2%
30	-	3	3	2.1%	-	-	-	-
Total	71	74	145	100.0%	32	32	64	100%





The data from the Callaghan Complex gather was compared to the population modeling completed prior to the gather. The table below shows various age groupings that were reviewed and that there were differences and similarities between the estimated age structure output by the model and the actual age structure obtained from the gather results. The closest comparison is for Bald Mountain, which may be due to the fact that the area had never been gathered recently (since 1981) and not had the age structure modified through gathers. The Callaghan HMA reflects the largest disparity which could be due to increased mortality of certain age groupings due to the lack of resources and the poor body condition of the wild horses in the HMA at the time.

**Table 5. Callaghan Complex Gather Results – Comparison to Estimated Age Structure**

Age groupings	Callaghan		Bald Mountain		Rocky Hills	
	Actual gather results	Pre-Gather Estimate	Actual gather results	Pre-Gather Estimate	Actual gather results	Pre-Gather Estimate
0-4	54.0%	73%	57.8	54%	63.4%	72%
5-9	25.2%	15%	17.2	23%	9.0%	14%
10-14	14.1%	8%	16.6	12%	14.5%	6%
15-19	2.6%	3%	4.9	7%	5.5%	4%
20+	0.6%	1%	2.8	3%	7.6%	5%
na	3.4%	-	0.7	-	-	-

The sex ratios for the wild horses gathered were all near the expected 50:50 for mares and studs with slight variation. Callaghan and Bald Mountain HMAs sex ratios were identical.

**Table 6. Sex Ratio Callaghan Complex**

Sex	Callaghan	Rocky Hills	Bald Mountain	Total
Female	53%	49%	53%	52%
Male	47%	51%	47%	48%

**New Pass/Ravenswood HMA**

The most recent gather of the New Pass/Ravenswood (NPR) HMA took place between November 3 and 14, 2007.

Throughout the entire gather, wild horses gathered well, and did not appear to be more than minimally stressed. Volunteer Veterinarians on site Nov. 3-8 were pleased with the condition of the animals in light of the drought and wild fires. The horses gathered from the northern portion of the HMA during the first 3 days of the gather were the thinnest captured. Most mares were on the lower end of condition class 4 (moderately thin), with a few near class 3 (thin). Backbone and ribs are clearly visible on most mares. Studs were in better condition, with most averaging class 5 (moderate), although many were class 4 with ribs clearly visible. Foals were all in fair/good condition.

Horses captured from the central and southern portion of the HMA were clearly in better body condition. Most mares were condition class 4.5-5, with few showing ribs or backbone. Most thin horses captured from these areas were very old horses. Additionally, several groups were captured from south and west of the trap, and in the New Pass Range, and were very large of heavy body weight. Foal size and condition followed that of the adults. The foals captured from the south and west portions of the HMA were the largest.

Overall, most foals were weanable, and of good size. A few small, younger foals were captured, and only one foal that was about 1 week of age. In most cases, the foals and mares were mixed so that foals could join up with their mothers.

Objectives of the gather were to remove all of the approximate 300 wild horses from the northern portion of the HMA which burned in 2007. Approximately 129-254 horses were identified for removal in the southern portion of the HMA to avoid the population from increasing to the point where the horses moved back onto the burned area. Using the population model, it was estimated that most horses

5 years old and older could be released back to the range (in the southern portion of the HMA), thereby shipping primarily only younger animals 0-3 years of age which would be primarily adoptable. 100% of all weanlings and yearlings were shipped. 97 and 91% of all 3 and 4 year olds respectively were also transported for adoption. The remaining age classes varied depending upon overall health and characteristics of the animals. The core breeding ages of 5 and 10 years of age were released back to the range as well as a selection of older animals. All total, 75% of the wild horses were removed from the New Pass/Ravenswood HMA in order to meet gather objectives. The chart above displays the age structure of the animals released.



Photo 1: New Pass/Ravenswood studs being held for release back to the HMA.

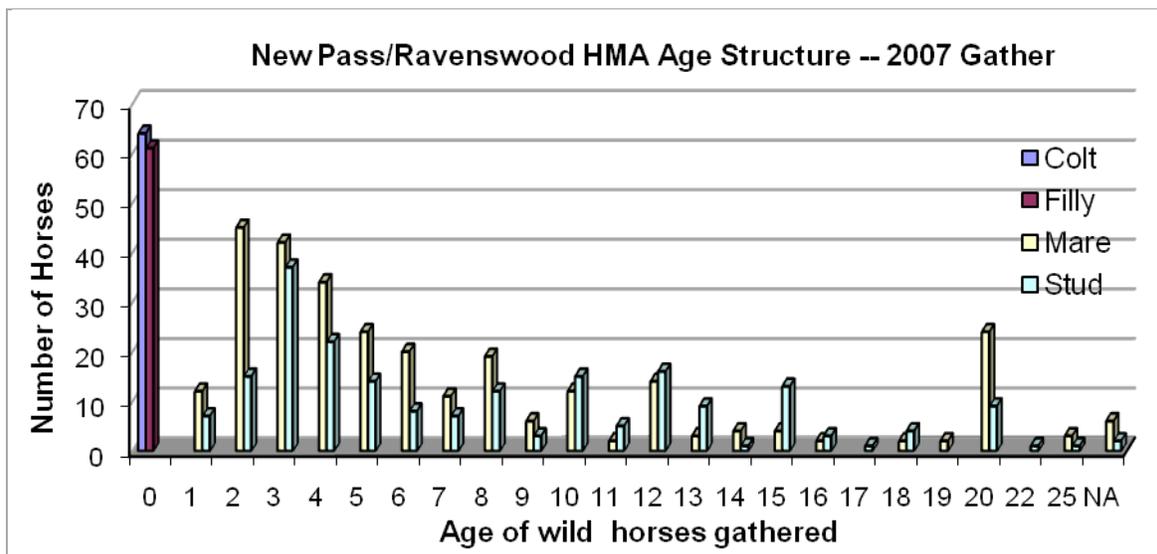
Photo 2: Studs identified for shipping to adoption facilities or LTHPs/

Photo 3-4: Mares awaiting release back to the HMA.

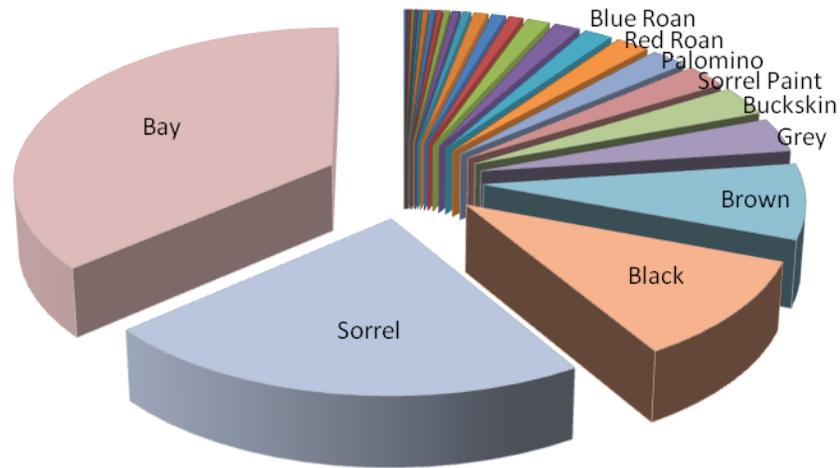
Photo 5: Mares identified for shipping to adoption or LTHPs. Note body condition.

**Table 7. New Pass/Ravenswood HMA Age Structure -- 2007**

Age	Age structure			Capture			Release		
	Mare	Stud	Total	Mare	Stud	Total	Mare	Stud	Total
0	18%	23%	20%	64	61	125	--	--	--
1	3%	3%	3%	12	7	19	--	--	--
2	13%	6%	10%	45	15	60	2	--	2
3	12%	14%	13%	42	37	79	3	4	7
4	10%	8%	9%	34	22	56	9	8	17
5	7%	5%	6%	24	14	38	14	7	21
6	6%	3%	5%	20	8	28	8	5	13
7	3%	3%	3%	11	7	18	10	4	14
8	5%	5%	5%	19	12	31	9	4	13
9	2%	1%	1%	6	3	9	3	2	5
10	3%	6%	4%	12	15	27	5	7	12
11	1%	2%	1%	2	5	7		3	3
12	4%	6%	5%	14	16	30	8	8	16
13	1%	3%	2%	3	9	12	2	5	7
14	1%	0%	1%	4	1	5	2	1	3
15	1%	5%	3%	4	13	17	3	6	9
16	1%	1%	1%	2	3	5		1	1
17	0%	0%	0%		1	1		1	1
18	1%	2%	1%	2	4	6	1		1
19	1%	0%	0%	2		2			
20	7%	3%	5%	24	9	34	9	3	12
22	0%	0%	0%		1	1			
25	1%	0%	1%	3	1	4			
NA	2%	1%	1%	6	2	8	1		1
Total	100%	100%	100%	355	266	622	89	69	158

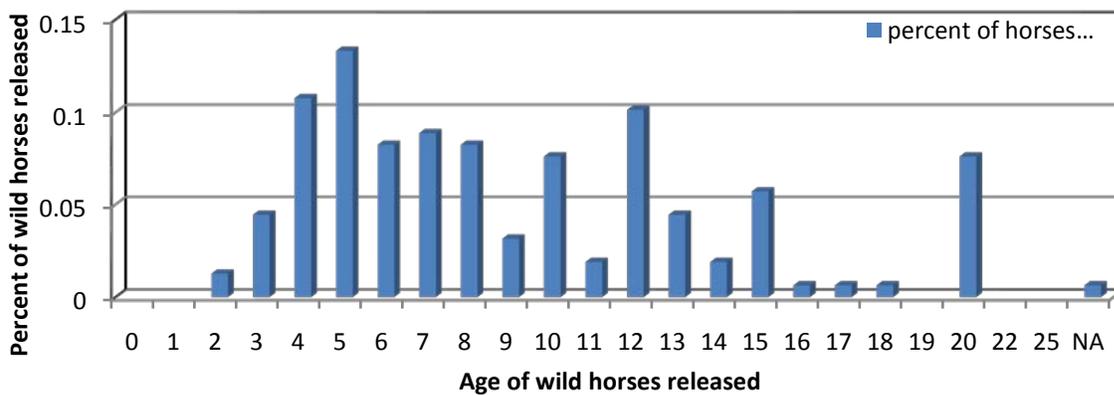


### New Pass/Ravenswood HMA Color -- 2007 Gather



- albino
- appaloosa
- burro
- paint/red roan
- roan
- grulla
- paint/blue roan
- paint/grey
- roan strawberry
- chestnut
- grey/white
- black/brown
- buckskin dun
- dun red
- paint/black
- paint/bay
- roan blue
- roan red
- palomino
- paint/sorrel
- buckskin
- grey
- brown
- black
- sorrel
- bay

### New Pass/Ravenswood Age Structure -- Released Horses



The age structure of the animals gathered represented normal patterns, and was very similar to the estimated age structure compiled prior to the gather (estimated from the population model). The following table displays the comparison of the estimated pre-gather age structure derived from the WinEquis population model, and the age structure of the wild horses gathered in 2007.

**Table 8. Age Structure Comparison --- New Pass/Ravenswood 2007**

Age	Actual Gathered (%)			Estimated Pre-Gather (%)			Difference from estimate (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0	10%	10%	20%	7%	8%	15%	3%	2%	+5%
1-2	4%	9%	13%	7%	11%	18%	-3%	-2%	-5%
3-5	12%	16%	28%	12%	16%	28%	0%	0%	0%

6-9	5%	9%	14%	9%	10%	19%	-4%	-1%	-5%
10-14	8%	6%	13%	6%	5%	11%	2%	1%	+2%
15-19	3%	2%	5%	4%	3%	7%	-1%	-1%	-2%
20+	2%	4%	6%	2%	1%	3%	0%	3%	+3%
Totals	43%	57%	100%	47%	53%	100%	-3.4%	3.4%	0%



*Callaghan HMA, wild horse inventory flight September 2009.*



*Rocky Hills HMA wild horse inventory flight September 2009. Large number of wild horses counted at Cadet Trough Spring (left) and photo of a small spring in the HMA (right).*



*Bald Mountain HMA. September 2009 wild horse inventory.*



*Bald Mountain HMA. September 2009 wild horse inventory. Photo on the right is Dry Canyon Spring, heavily utilized by both wild horses and cattle.*



*New Pass/Ravenswood HMA wild horses inventory September 2008. Lower right – wild horses run through the trees in an area affected by wildfire.*



*Large group of wild horses finding shade and wallowing (far left) in the Dry Canyon Spring*



*Foals from the 2008/2009 Callaghan Complex gather offered for adoption in Winnemucca, Nevada in May 2009. Look how they've grown!*

---

## **Appendix C: Standard Operating Procedures for Population-level Fertility Control Treatments**

### ***22-month time-release pelleted porcine zona pellucida (PZP) vaccine:***

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

1. PZP vaccine would be administered only by trained BLM personnel or collaborating research partners.
2. Mares that have never been treated would receive 0.5 cc of PZP vaccine emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). Mares identified for re-treatment receive 0.5 cc of the PZP vaccine emulsified with 0.5 cc of Freund's Incomplete Adjuvant (FIA).
3. The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18-gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14-gauge needle. These are delivered using a modified syringe and jabstick to inject the pellets into the gluteal muscles of the mares being returned to the range. The pellets are designed to release PZP over time similar to a time-release cold capsule.
4. Delivery of the vaccine would be by intramuscular injection into the gluteal muscles while the mare is restrained in a working chute. The primer would consist of 0.5 cc of liquid PZP emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid or pellets would be injected into the left hind quarters of the mare, above the imaginary line that connects the point of the hip (hook bone) and the point of the buttocks (pin bone).
5. In the future, the vaccine may be administered remotely using an approved long range darting protocol and delivery system if or when that technology is developed.
6. All treated mares will be freeze-marked on the hip or neck HMA managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

### **Monitoring and Tracking of Treatments:**

1. At a minimum, estimation of population growth rates using helicopter or fixed-wing surveys will be conducted before any subsequent gather. During these surveys it is not necessary to identify which foals were born to which mares; only an estimate of population growth is needed (i.e. # of foals to # of adults).
2. Population growth rates of herds selected for intensive monitoring will be estimated every year post-treatment using helicopter or fixed-wing surveys. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of adults). If, during routine HMA field monitoring (on-the-ground), data describing mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.
3. A PZP Application Data sheet will be used by field applicators to record all pertinent data relating to identification of the mare (including photographs if mares are not freeze-marked) and date of treatment. Each applicator will submit a PZP Application Report and accompanying narrative and data sheets will be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.
4. A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by HMA, field office, and State along with the freeze-mark(s) applied by HMA and date.



Preparation of the jab stick used to inject the time release PZP.



Freeze-marking the identifying letters on the left hip of the mare in the working chute.



Injecting the hip of the mare with the jabstick

Photos taken during the New Pass/Ravenswood HMA wild horse gather November 2007 and Callaghan Complex Gather December/January 2009

---

## ***Appendix D: Summary of Population Modeling***

The WinEquus Feral Horse Population Model, developed by Dr. Steven Jenkins at the University of Nevada at Reno was designed to assist Wild Horse and Burro Specialists evaluate various management plans and possible outcomes for management of wild horses that might be considered for a particular area. Windows version 3.2 of the model is accessible at [www.wolfweb.unr.edu/homepage/jenkins](http://www.wolfweb.unr.edu/homepage/jenkins). The model was used to display potential outcomes of the Proposed Action and Alternative 1 and a No Action/No Gather scenario. The use of the population model is discussed in detail in the Callaghan Complex and New Pass/Ravenswood EAs identified in Section 1.1. Please refer to those documents for more detailed information.

The purpose of the modeling was to compare the potential results of the Proposed Action and Alternative 1 to include population size over time, growth rates, and the number of animals that could be gathered, removed and treated for fertility control over the next 10 years.

The model was run for 10 years to show potential effects over time. However, prior to future gathers, the data from this proposed gather along with future inventory data would be analyzed to determine the appropriate course of action and develop a range of alternatives. Appropriate NEPA would also be completed with involvement from the interested public prior to a future gather being conducted. This information would also be compiled into a Herd Management Area Plan in the future.

### ***Proposed Action Modeling Scenario – Capture, Treat and Release Strategy***

For the Proposed Action, the model was set to gather at two year intervals beginning in 2010, implementing fertility control on all mares. This gather and treatment frequency was chosen to model the most intensive gather and fertility control treatment that could be possible. It is likely that future gathers would occur about every 3 years (due to budget or other unforeseen factors). The model was run from 2010 through 2020 and gives data for 11 years and 100 trials. The simulations were set to gather for fertility control regardless of population size and to continue to gather after removals to treat all females. 100% of both foals and yearlings were identified for potential removal for all gathers. These settings cannot be changed for different years within the simulation otherwise it would have been possible to select for only foals removed in some gathers and foals and yearlings in others. It is likely that during the proposed 2010 gather, that only foals and some small yearlings would be removed. In later gathers, both foals and yearlings could be removed if necessary or desirable. Despite the fact that some horses could be removed from outside HMA boundaries under the Proposed Action, this number is not known for the current proposed gather or for future potential gathers and therefore was not included in the modeling.

The percent of the population that could be gathered was derived from the estimated gather efficiency for the last gather and ranged from 80% for Rocky Hills to 90% for Bald Mountain. These are estimates and will certainly fluctuate greatly in future gathers as influenced by the climate, snow cover, and animal awareness of the helicopter through repeated gathers.

Outputs include tables and graphs. The results were analyzed in Excel Pivot tables to derive age structures and removal numbers for the Most Typical Trial and averages of all trials. The Most Typical Trial was often referenced and is similar to the results for the average of all 100 trials.

### ***Alternative 1 Modeling Scenario – Current Management***

For Alternative 1, a scenario was chosen that would emulate current management strategies. Typically, HMAs in the Battle Mountain District are gathered every 5-7 years on average regardless of population size due to National and State gather priorities. Five years was chosen for the Alternative 1 modeling, depicting gathers in 2012 and 2017 for the New Pass/Ravenswood HMA and 2013 and 2018 for the Callaghan Complex. No population controls were simulated and the data represents a “gather only” strategy, with all age groups having an equal chance of being removed or released during the gather. This simulation was developed to display results typical of the past and current management where gather frequency is 5-7 years, and to display results where no population controls are implemented.

A No Gather/No Management scenario was also simulated to show the potential population growth with no population controls and no gathers completed between 2010 and 2020. The average population size for all 100 trials was also displayed in the summary tables for comparison, even though this alternative was not analyzed in detail in this EA. Graphs for this alternative are also located in the back of this Appendix.

For all modeling simulations, the population size was not set as exact, and the model randomizes the starting population based on environmental conditions and the fact that populations are generally larger than estimated as shown through gather and inventory data.

The model has not been updated for use on the “Capture, Treat and Release” gathers where the target population is still benefiting from the previous application of fertility control. Therefore the model assumes that mares would foal normally during the first year after application of fertility control, which is not the case with this proposal. Callaghan, Rocky Hills and Bald Mountain were treated in 2008/2009, and are currently benefiting from the first year of effectiveness. 2011 should be the second year of effectiveness. 2012 would then be the first year of effectiveness for the repeat treatment of fertility control. New Pass/Ravenswood HMA is experiencing the second year of fertility control in 2010, and would experience slight benefits from the third year of fertility control in 2011. The fertility control re-treatment would become effective in 2010. The model is currently not capable of producing outputs considering these scenarios.

The model was first utilized to derive an estimated 2010 population based on the pre gather population data, observed age structure and release data from the most recent gather and the most recent inventory data reflecting population size. From these data, the number of wild horses un-captured was also derived and a gather percentage estimated.

The New Pass/Ravenswood HMA was gathered in November 2001. At that time, 96 mares were treated with the 2-year PZP. The estimated post gather population was 208-268. Flights conducted in September 2008 and September 2009 indicate that there were 178 animals un-captured, there were likely 336 wild horses remaining post gather and that the gather efficiency was 78%. There could have also been movement of wild horses east from the Clan Alpine HMA, but this has not been confirmed. This information was run through the model to simulate the estimated 2010 population after two years of effective fertility control (2009 and 2010).

The Callaghan, Rocky Hills and Bald Mountain HMAs were gathered in December 2008 through January 2009. Released mares were treated with the 2 year PZP. 40 mares were treated in Callaghan, 49 in Bald Mountain and 32 in Rocky Hills HMA. Inventory flights were conducted in September 2009 and the same procedures used as for New Pass/Ravenswood to estimate the un-captured animals and gather efficiency. The post gather estimate for the Callaghan Complex was 349 total wild horses. The 2009 inventory flight results indicate that there were approximately 211 horses un-captured during the gather verses the estimate of 106 at the time of the gather, and the actual post gather population was likely around 454 wild horses. The estimated gather efficiency averaged 89%.

The information was run through the model to simulate the estimated 2010 Callaghan Complex populations after one year of effective fertility control (2010). The typical trial was selected for use. The population sizes produced by the model were not identical to the estimated population based on inventories, but were not adjusted. The data produced by the model was used for the analysis.

The following table displays the estimated 2010 age structures for the 4 HMAs based on the modeling<sup>20</sup>.

**Table 1. Estimated 2010 Age Structures**

Age	Callaghan			Bald Mountain			Rocky Hills			New Pass/Ravenswood		
	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
Foal	24	26	50	12	13	25	13	14	27	39	36	75
1	18	16	34	12	9	21	22	15	37	39	27	66
2	8	6	14	7	3	10	5	4	9	55	41	96
3	16	7	23	2	3	5	7	5	12	17	20	37
4	14	8	22	5	6	11	10	3	13	6	8	14
5	13	9	22	14	6	20	14	11	25	7	4	11
6	13	14	27	11	6	17	18	13	31	12	8	20
7	5	11	16	10	7	17	3	8	11	20	14	34
8	8	9	17	3	3	6	6	1	7	21	9	30
9	11	7	18	9	6	15	2	2	4	18	7	25
10-14	23	20	43	19	20	39	8	13	21	39	19	58
15-19	11	9	20	7	17	24	6	10	16	13	14	27
20+	2	1	3	2	17	19	4	10	14	4	13	17
Total	166	143	309	113	116	229	118	109	227	290	220	510

## Summary Tables

The following tables summarize the modeling outputs. Table 2 displays the total number of wild horses that could be removed under the Proposed Action or Alternative 1 scenarios, whereas Table 3 displays only the animals removed that would be 0-4 years of age which would typically be adoptable. Table 4

20. The figures produced by the model are not identical to BLMs estimates due to randomization and other factors built into the population model program.

displays the results from the model for wild horses 5 years of age and older that would be removed which would typically not be adoptable animals and would need to be maintained in LTHPs.

**Table 2: Total horses removed (All Ages) in 11 years – Typical Trial**

HMA	Proposed Action	Alternative 1
Callaghan	189	468
Bald Mountain	93	336
Rocky Hills	82	238
New Pass/Ravenswood	220	808
<b>Total</b>	<b>584</b>	<b>1,850</b>

**Table 3: Total horses removed (Ages 0-4) in 11 years – Typical Trial**

HMA	Proposed Action	Alternative 1
Callaghan	189	350
Bald Mountain	93	241
Rocky Hills	82	155
New Pass/Ravenswood	220	615
<b>Total</b>	<b>584</b>	<b>1,361</b>

Even though these animals would typically be adoptable, Alternative 1 would still result in 233% more horses removed in the 0-4 year group than under the Proposed Action according to the results from the model displayed in these tables.

**Table 4: Total horses removed (Ages 5-20+) in 11 years – Typical Trial**

HMA	Proposed Action	Alternative 1
Callaghan	0	118
Bald Mountain	0	95
Rocky Hills	0	83
New Pass/Ravenswood	0	193
<b>Total</b>	<b>0</b>	<b>489</b>

The removal animals in the above table would likely not be adopted due to age and overall adoption demands and would be put through the sale program or transported to LTPs for the rest of their lives at considerable cost to the BLM.

The following tables show the ranges for all trials and all HMAs through the modeling for the Proposed Action and Alternative 1.

**Table 5: WinEquus Population Model Results Callaghan HMA**

Alternative	Minimum Populations	Average Populations	Maximum Populations	Average Growth Rates	Gathered	Removed	Treated
<b>Proposed Action</b>	89-275	191-418	310-588	-6.8-5.8	882-1865	71-396	315-595
<b>Alternative 1</b>	106-175	240-329	347-708	9.2-21.6	267-687	236-650	0

**Table 6: WinEquis Population Model Results Bald Mountain HMA**

Alternative	Minimum Populations	Average Populations	Maximum Populations	Average Growth Rates	Gathered	Removed	Treated
<b>Proposed Action</b>	91-201	150-232	229-334	-6.0-5.2	735-1082	40-175	229-437
<b>Alternative 1</b>	104-162	206-251	274-493	6.6-19.1	115-511	137-474	0

**Table 7: WinEquis Population Model Results Rocky Hills HMA**

Alternative	Minimum Populations	Average Populations	Maximum Populations	Average Growth Rates	Gathered	Removed	Treated
<b>Proposed Action</b>	64-137	97-137	150-236	-5.9-6.3	425-773	30-153	172-294
<b>Alternative 1</b>	76-115	137-183	199-404	7.2-23.7	115-369	108-352	0

**Table 8: WinEquis Population Model Results New Pass/Ravenswood HMA**

Alternative	Minimum Populations	Average Populations	Maximum Populations	Average Growth Rates	Gathered	Removed	Treated
<b>Proposed Action</b>	221-437	340-541	506-747	-3.7-8.2	1,557-2,368	113-506	589-948
<b>Alternative 1</b>	347-532	532-876	658-1,813	8.6-22.4	282-1,387	253-1,340	0

### ***Conclusions***

The model consistently shows that through a more intensive capture, treat and release strategy that approximately 2-3 times the number of wild horses would be gathered under the Proposed Action for the median trial. However, the number of animals removed from the range through the Proposed Action as opposed to Alternative 1 is substantially reduced. Additionally, the removed animals would be young and adoptable and would not need to be maintained in LTHPs. Though the cost of a more structured, schedule of gathers and treatment would be more costly compared to the current and past management, these costs would be more than offset through the reduced number of animals in the adoption system, LTHPs and the overall improvement and restoration of the range through reduced populations that are maintained at the AML.

# Callaghan HMA

**Table 9: Callaghan HMA Modeling Results Comparison of Alternatives**

Year	Proposed Action		Alternative 1		No Gather	
	% of trials with a gather	Typical Trial Population	% of trials with a gather	Typical Trial Population	% of trials with a gather	Population Size, Average of 100 Trials
Year 1 - 2010	100	334	0	327	0	345
Year 2 - 2011	0	309	0	410	0	401
Year 3 - 2012	100	304	0	470	0	464
Year 4 -- 2013	0	257	100	545	0	535
Year 5 - 2014	100	253	0	152	0	600
Year 6 - 2015	0	237	0	162	0	669
Year 7 - 2016	100	240	0	222	0	737
Year 8 - 2017	0	215	0	236	0	801
Year 9 - 2018	100	206	77	252	0	865
Year 10 - 2019	0	190	0	176	0	942
Year 11 -- 2020	100	189	0	193	0	1,007

The model displayed a larger starting population than currently estimated based on the 2009 inventory. Because only foals and yearlings are removed, the Proposed Action scenario shows that the population is reduced slowly over time, whereas the Alternative 1 scenario shows the population increasing until the next gather in 2013 to 229% of the upper limit of AML.

**Table 10: Population Sizes in 11 years - Minimum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	89	106
Median Trial	182	146
Highest Trial	275	175

**Table 11: Population Sizes in 11 years - Average**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	191	240
Median Trial	244	282
Highest Trial	418	329

**Table 12: Population Sizes in 11 years - Maximum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	310	347
Median Trial	336	520
Highest Trial	588	708

**Table 13: Average Growth Rate in 10 Years**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	-6.8	9.2
Median Trial	0.0	15.4
Highest Trial	5.8	21.6

**Table 14: Totals in 11 Years -- Gathered**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	882	267
Median Trial	1090	488
Highest Trial	1,865	687

**Table 15: Totals in 11 Years -- Removed**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	71	236
Median Trial	170	450
Highest Trial	396	650

Though almost three times the number of gathered animals would result from the Proposed Action strategy, the number of animals removed is approximately 60% of that of Alternative 1. All animals removed under the Proposed Action would be foals or foals and yearlings. Under the modeled scenario, the animals removed under Alternative 1 would be comprised of all age groups.

**Table 16: Proposed Action: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	47	0	13	0	6	0	8	0	0	0	0	74
1	33	0	46	0	17	0	19	0	0	0	0	115
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0	0	0	0	0	0
20+	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>80</b>	<b>0</b>	<b>59</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>189</b>

The table above for the most typical trial shows that with a two-year fertility control gather scenario, that by 2017, no more animals would need to be removed to maintain the population within the AML due to the effects of fertility control.

**Table 17: Alternative 1: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	0	0	0	73	0	0	0	0	28	0	0	101
1	0	0	0	64	0	0	0	0	17	0	0	81
2	0	0	0	60	0	0	0	0	32	0	0	92
3	0	0	0	33	0	0	0	0	12	0	0	45
4	0	0	0	24	0	0	0	0	7	0	0	31
5	0	0	0	14	0	0	0	0	0	0	0	14
6	0	0	0	19	0	0	0	0	8	0	0	27
7	0	0	0	15	0	0	0	0	3	0	0	18
8	0	0	0	13	0	0	0	0	4	0	0	17
9	0	0	0	23	0	0	0	0	2	0	0	25
10-14	0	0	0	8	0	0	0	0	0	0	0	8
15-19	0	0	0	3	0	0	0	0	0	0	0	3
20+	0	0	0	6	0	0	0	0	0	0	0	6
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>355</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>113</b>	<b>0</b>	<b>0</b>	<b>468</b>

In the table above, 350 wild horses would be removed within the 0-4 year old age group which would be typically adoptable. This is 161 more than in the Proposed Action table above. Additionally, 118 wild horses would be removed that would typically not be adoptable and would need to be maintained in Long Term Holding Pastures.

**Table 18: Totals in 11 Years – Treated Mares**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	315	0
Median Trial	390	0
Highest Trial	595	0

**Table 19: Most Typical Trial, Average Age Structure over 11 Years**

Age group	Proposed Action	No-Action
foal	9%	20%
1	7%	15%
2	2%	11%
3	3%	8%
4	3%	7%
5	4%	6%
6	5%	5%
7	5%	5%
8	6%	4%
9	6%	4%
10-14	30%	11%
15-19	14%	4%
20+	6%	1%

# Bald Mountain HMA

**Table 20: Bald Mountain HMA Modeling Results Comparison of Alternatives**

Year	Proposed Action		Alternative 1		No Gather	
	% of trials with a gather	Typical Trial Population	% of trials with a gather	Typical Trial Population	% of trials with a gather	Population Size, Average of 100 Trials
Year 1 - 2010	100	242	0	243	0	248
Year 2 - 2011	0	240	0	277	0	287
Year 3 - 2012	100	240	0	339	0	328
Year 4 -- 2013	0	200	100	383	0	378
Year 5 - 2014	100	194	0	147	0	433
Year 6 - 2015	0	197	0	183	0	492
Year 7 - 2016	100	170	0	198	0	566
Year 8 - 2017	0	161	0	250	0	653
Year 9 - 2018	100	161	83	261	0	751
Year 10 - 2019	0	171	0	166	0	875
Year 11 -- 2020	100	165	0	185	0	1,012

Because only the foals and yearlings have been identified for removal under the Proposed Action modeling, the population decreases slowly over the first few years to a point where it is maintained within the established AML. The population sizes under the Alternative 1 scenario are generally higher and exceed the established AML 6 of 11 years.

**Table 21: Population Sizes in 11 years - Minimum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	91	104
Median Trial	157	138
Highest Trial	201	162

**Table 22: Population Sizes in 11 years - Average**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	150	206
Median Trial	195	234
Highest Trial	232	251

**Table 23: Population Sizes in 11 years - Maximum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	229	274
Median Trial	252	380
Highest Trial	334	493

Population sizes under the Proposed Action are generally lower for the average and maximum trials than for the Alternative 1 strategy.

**Table 24: Average Growth Rate in 10 Years**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	-6.0	6.6
Median Trial	-0.7	14.4
Highest Trial	5.2	19.1

**Table 25: Totals in 11 Years -- Gathered**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	735	155
Median Trial	924	346
Highest Trial	1082	511

**Table 26: Totals in 11 Years -- Removed**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	40	137
Median Trial	92	317
Highest Trial	175	474

The number of wild horses gathered under the Proposed Action is approximately twice that of Alternative 1; however the number of animals removed is only 29-36% of the Alternative 1 strategy according to the modeling. Additionally, these animals would be comprised of foals or foals and yearlings and in general would be fully adopted, whereas the animals gathered under Alternative 1 would be comprised of all age groups.

**Table 27: Totals in 11 Years – Treated Mares**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	229	0
Median Trial	302	0
Highest Trial	437	0

**Table 28: Proposed Action: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	26	0	7	0	0	0	0	0	0	0	0	33
1	19	0	41	0	0	0	0	0	0	0	0	60
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0	0	0	0	0	0
20+	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>45</b>	<b>0</b>	<b>48</b>	<b>0</b>	<b>93</b>							

The table above shows the Most Typical Trial for the Proposed Action. Due to fertility control, animals are shown removed only through 2012.

**Table 29: Alternative 1: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	0	0	0	43	0	0	0	0	28	0	0	71
1	0	0	0	52	0	0	0	0	23	0	0	75
2	0	0	0	29	0	0	0	0	11	0	0	40
3	0	0	0	14	0	0	0	0	19	0	0	33
4	0	0	0	12	0	0	0	0	10	0	0	22
5	0	0	0	5	0	0	0	0	13	0	0	18
6	0	0	0	3	0	0	0	0	4	0	0	7
7	0	0	0	6	0	0	0	0	6	0	0	12
8	0	0	0	14	0	0	0	0	4	0	0	18
9	0	0	0	9	0	0	0	0	1	0	0	10
10-14	0	0	0	4	0	0	0	0	1	0	0	5
15-19	0	0	0	1	0	0	0	0	1	0	0	2
20+	0	0	0	18	0	0	0	0	5	0	0	23
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>210</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>126</b>	<b>0</b>	<b>0</b>	<b>336</b>

The table above shows the removal of animals in all age groups through gathers completed through 2020. Of those removed, the model shows that 241 would be between 0-4 years of age and would be generally adoptable. 95 would be between ages 5 and 20+, generally not adoptable and would be maintained in Long Term Holding Pastures.

**Table 30: Age Structure over 11 Years – Typical Trial**

Age	Proposed Action	Alternative 1
foal	7%	19%
1	7%	15%
2	4%	11%
3	4%	8%
4	3%	6%
5	4%	5%

Age	Proposed Action	Alternative 1
6	4%	4%
7	5%	4%
8	4%	3%
9	5%	3%
10-14	23%	11%
15-19	14%	5%
20+	16%	6%

## Rocky Hills HMA

**Table 31: Rocky Hills HMA Modeling Results Comparison of Alternatives**

Year	Proposed Action		Alternative 1		No Gather	
	% of trials with a gather	Typical Trial Population	% of trials with a gather	Typical Trial Population	% of trials with a gather	Population Size, Average of 100 Trials
Year 1 - 2010	100	172	0	158	0	163
Year 2 - 2011	0	158	0	192	0	182
Year 3 - 2012	100	158	0	232	0	208
Year 4 -- 2013	0	134	100	251	0	242
Year 5 - 2014	100	124	0	93	0	277
Year 6 - 2015	0	128	0	113	0	317
Year 7 - 2016	100	126	0	129	0	363
Year 8 - 2017	0	122	0	155	0	421
Year 9 - 2018	100	122	86	185	0	493
Year 10 - 2019	0	125	0	103	0	573
Year 11 -- 2020	100	124	0	110	0	665

For the Most Typical Trial, once the gather were completed in 2010, the modeling shows the Proposed Action to maintain a fairly stable population through time, decreasing slightly from 158 to 122 in 2018 as fertility control continues to be applied. Population sizes under the Alternative 1 strategy are much higher on average and exceed the AML 6 of the 11 years

**Table 32: Population Sizes in 11 years - Minimum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	64	76
Median Trial	109	93
Highest Trial	137	115

**Table 33: Population Sizes in 11 years - Average**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	97	137
Median Trial	132	156
Highest Trial	181	183

**Table 34: Population Sizes in 11 years - Maximum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	150	199
Median Trial	164	251
Highest Trial	236	404

**Table 35: Average Growth Rate in 10 Years**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	-5.9	7.2
Median Trial	1.6	14.7
Highest Trial	6.3	23.7

**Table 36: Totals in 11 Years -- Gathered**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	425	115
Median Trial	570	242
Highest Trial	773	369

**Table 37: Totals in 11 Years -- Removed**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	30	108
Median Trial	72	232
Highest Trial	153	352

The number of horses gathered under the Proposed Action is about twice that of the Alternative 1 strategy. However, the number of animals removed is 27-43% of Alternative 1. All animals removed under the Proposed Action would be foals or foals and yearlings and would be very adoptable. The animals removed under the No-Action protocol would consist of all age groups.

**Table 38: Totals in 11 Years -- Treated Mares**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	172	0
Median Trial	212	0
Highest Trial	294	0

**Table 39: Proposed Action: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	16	0	5	0	0	0	0	0	0	0	0	21
1	25	0	36	0	0	0	0	0	0	0	0	61
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0	0	0	0	0	0
20+	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>41</b>	<b>0</b>	<b>41</b>	<b>0</b>	<b>82</b>							

The above table shows that after 2012, removals are no longer necessary due to the effectiveness of the fertility control on this population. In total, the Most Typical Trial reflects 82 foals and yearlings removed over the next 10 years.

**Table 40: Alternative 1: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	0	0	0	17	0	0	0	0	21	0	0	38
1	0	0	0	26	0	0	0	0	13	0	0	39
2	0	0	0	33	0	0	0	0	11	0	0	44
3	0	0	0	7	0	0	0	0	9	0	0	16
4	0	0	0	13	0	0	0	0	5	0	0	18
5	0	0	0	4	0	0	0	0	2	0	0	6
6	0	0	0	3	0	0	0	0	11	0	0	14
7	0	0	0	4	0	0	0	0	2	0	0	6
8	0	0	0	14	0	0	0	0	3	0	0	17
9	0	0	0	16	0	0	0	0	9	0	0	25
10-14	0	0	0	1	0	0	0	0	2	0	0	3
15-19	0	0	0	2	0	0	0	0	0	0	0	2
20+	0	0	0	9	0	0	0	0	1	0	0	10
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>149</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>89</b>	<b>0</b>	<b>0</b>	<b>238</b>

In the above table approximately 155 wild horses 4 years old and younger would be removed under Alternative 1 through 2020. Approximately 83 animals 5 years and older would also be removed and would likely go to LTPs because they are typically not adopted by the public.

**Table 41: Age Structure – Average over 11 years.**

Age	Proposed Action	Alternative 1
foal	9%	17%
1	8%	15%
2	4%	11%
3	4%	8%
4	5%	6%
5	6%	6%
6	6%	6%
7	7%	5%
8	6%	5%
9	6%	4%
10-14	22%	8%
15-19	9%	4%
20+	9%	4%

## New Pass/Ravenswood HMA

**Table 42: New pass/Ravenswood HMA Modeling Results Comparison of Alternatives**

Year	Proposed Action		Alternative 1		No Gather	
	% of trials with a gather	Typical Trial Population	% of trials with a gather	Typical Trial Population	% of trials with a gather	Population Size, Average of 100 Trials
Year 1 - 2010	100	539	0	547	0	553
Year 2 - 2011	0	525	0	585	0	617
Year 3 - 2012	100	521	97	794	0	704
Year 4 -- 2013	0	431	0	433	0	787
Year 5 - 2014	100	441	0	571	0	864
Year 6 - 2015	0	448	0	587	0	940
Year 7 - 2016	100	399	0	579	0	1,026
Year 8 - 2017	0	407	94	671	0	1,091
Year 9 - 2018	100	376	0	419	0	1,171
Year 10 - 2019	0	404	0	558	0	1,165
Year 11 -- 2020	100	379	0	625	0	1,205

Over time, the population size under the Proposed Action strategy declines and stabilizes between 376 and 448 animals. The Alternative 1 scenario reflects higher populations overall, and 6 years of the 11 total in excess of the established AML.

**Table 43: Population Sizes in 11 years - Minimum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	221	347
Median Trial	364	441
Highest Trial	437	532

**Table 44: Population Sizes in 11 years - Average**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	340	532
Median Trial	449	620
Highest Trial	541	876

**Table 45: Population Sizes in 11 years - Maximum**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	506	658
Median Trial	558	878
Highest Trial	747	1,813

Average and maximum populations are substantially higher for the Alternative 1 scenario than for the Proposed Action scenario.

**Table 46: Average Growth Rate in 10 Years**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	-3.7	8.6
Median Trial	2.0	16.1
Highest Trial	8.2	22.4

**Table 47: Totals in 11 Years -- Gathered**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	1,557	282
Median Trial	1,998	758
Highest Trial	2,368	1,387

**Table 48: Totals in 11 Years -- Removed**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	113	253
Median Trial	278	698
Highest Trial	506	1,340

The numbers of wild horses gathered is much greater for the Proposed Action than for the Alternative 1 strategy. However, the number of animals removed from the range is 37-44% of that of the Alternative 1 strategy, and animals would be comprised of highly adoptable foals and yearlings.

**Table 49: Totals in 11 Years – Treated Mares**

Trial	Alternative	
	Proposed Action	Alternative 1
Lowest Trial	589	0
Median Trial	726	0
Highest Trial	948	0

**Table 50: Proposed Action: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	62	0	20	0	0	0	0	0	0	0	0	82
1	54	0	84	0	0	0	0	0	0	0	0	138
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0	0	0	0	0	0
20+	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>116</b>	<b>0</b>	<b>104</b>	<b>0</b>	<b>220</b>							

The above table shows that under the Proposed Action that the application of fertility control eliminates the need to remove any wild horses after the 2012 gather. All total, only 220 animals consisting of foals and yearlings are removed over a 10 year period.

**Table 51: Alternative 1: Age Structure of Removed Animals 2010-2020 -- Most Typical Trial**

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
foal	0	0	100	0	0	0	0	110	0	0	0	210
1	0	0	94	0	0	0	0	96	0	0	0	190
2	0	0	31	0	0	0	0	24	0	0	0	55
3	0	0	30	0	0	0	0	65	0	0	0	95
4	0	0	42	0	0	0	0	23	0	0	0	65
5	0	0	19	0	0	0	0	42	0	0	0	61
6	0	0	6	0	0	0	0	33	0	0	0	39
7	0	0	6	0	0	0	0	15	0	0	0	21
8	0	0	5	0	0	0	0	9	0	0	0	14
9	0	0	11	0	0	0	0	19	0	0	0	30
10-14	0	0	3	0	0	0	0	7	0	0	0	10

Age	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
15-19	0	0	0	0	0	0	0	1	0	0	0	1
20+	0	0	9	0	0	0	0	8	0	0	0	17
<b>Total</b>	<b>0</b>	<b>0</b>	<b>356</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>452</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>808</b>

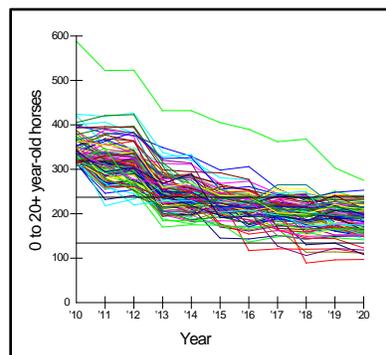
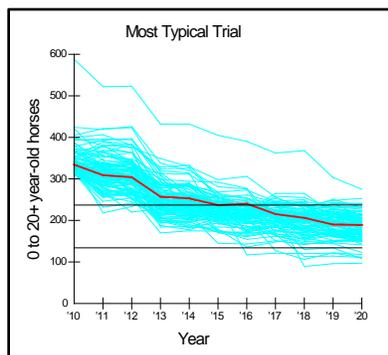
The above table shows gathers occurring in 2012 and 2017. All age groups are removed. A total of 615 animals 0-4 years of age are removed that could be adopted, which is 395 more than the above Proposed Action strategy. Additionally, 193 animals ages 5-20 years would be removed that would generally not be adopted and would need to be maintained in Long Term Holding Pastures.

**Table 52: Age Structure – Typical Trial**

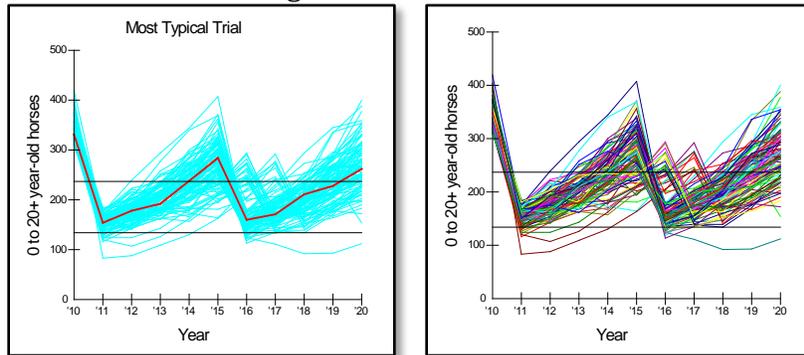
Age	Proposed Action	Alternative 1
foal	9%	17%
1	8%	17%
2	6%	13%
3	6%	12%
4	6%	8%
5	6%	6%
6	6%	5%
7	6%	4%
8	5%	3%
9	6%	3%
10-14	20%	8%
15-19	8%	3%
20+	6%	2%

## Modeling Graphics

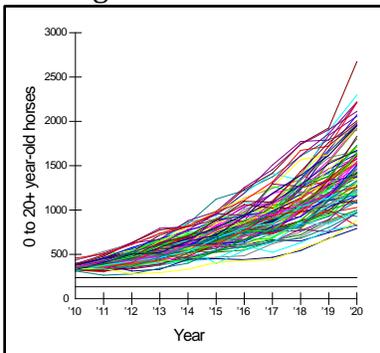
Callaghan HMA -- Proposed Action Typical Trial and Spaghetti Graph. Each line in the graph represents a trial. Most Typical Trial is represented in red.



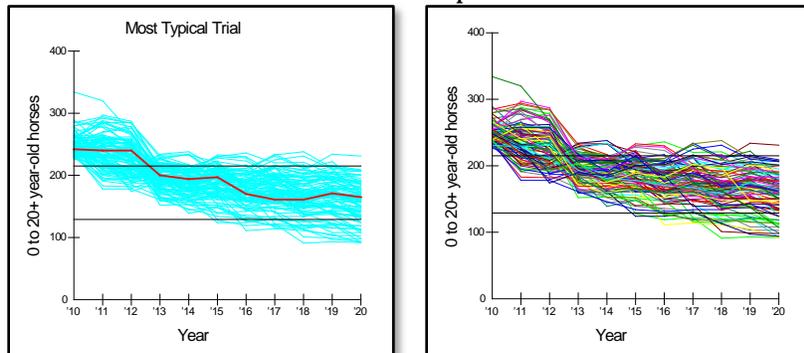
### Callaghan HMA Alternative 1



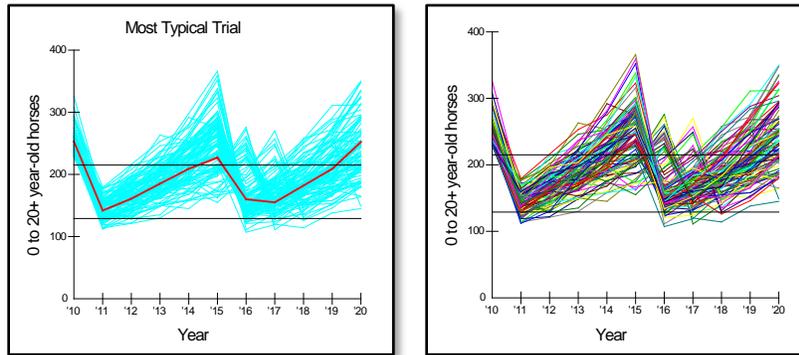
### Callaghan HMA No Gather



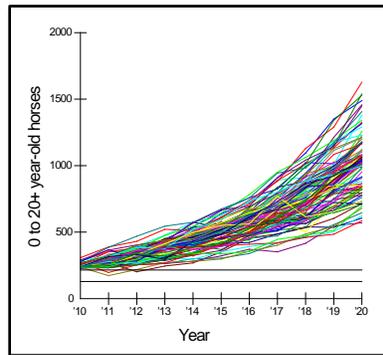
### Bald Mountain Proposed Action



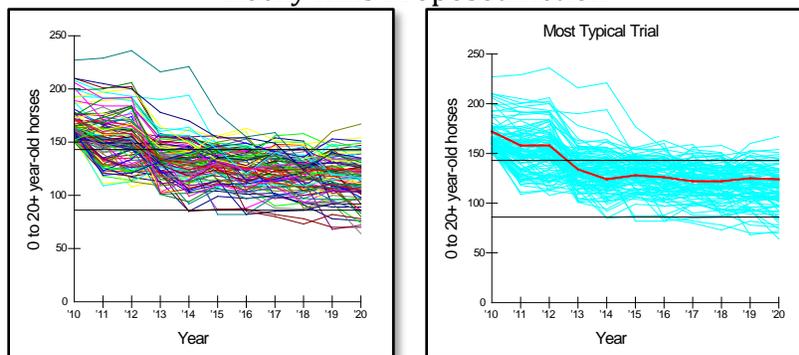
### Bald Mountain Alternative 1



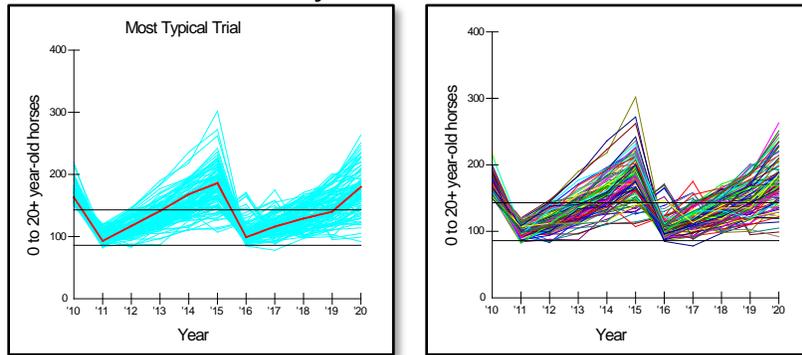
### Bald Mountain No Gather



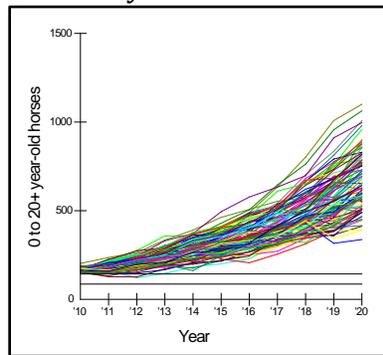
### Rocky Hills Proposed Action



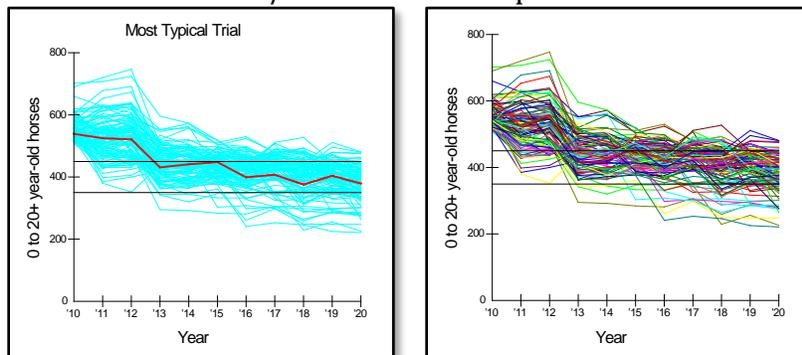
### Rocky Hills Alternative 1



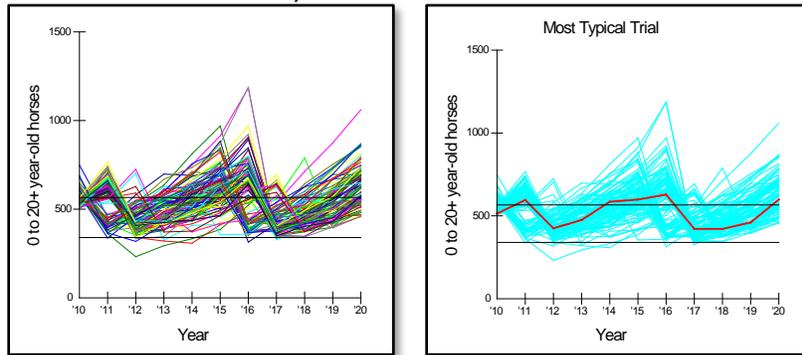
### Rocky Hills No Gather



### New Pass/Ravenswood Proposed Action



### New Pass/Ravenswood Alternative 1



### New Pass/Ravenswood No Gather

