

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

Environmental Assessment
DOI-BLM-NV-B010-2015-0011-EA

Preliminary

Fish Creek Herd Management Area Wild Horse Gather Plan



December 2014

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. Estimated Wild Horse Population	6
1.3. Purpose of and Need for the Proposed Action	8
1.4. Conformance with Existing Land Use Plans	10
1.5. Relationship to Statutes, Regulations, Policy, Plans or Other Environmental Analysis	10
1.6. Conformance with Rangeland Health Standards and Guidelines	12
1.7. Decision to be Made	13
1.8. Scoping and Identification of Issues	13
2. Proposed Action and Alternatives	14
2.1. Introduction	14
2.2. Proposed Action and Alternatives in Detail	15
2.3. Management Actions Common to Multiple Alternatives	20
2.4. Alternatives Comparison	26
2.5. Alternatives Considered but Eliminated from Detailed Analysis	27
3. Affected Environment and Environmental Consequences	31
3.1. General Description of the Affected Environment	32
3.2. Wild Horses	32
3.3. Livestock Management	64
3.4. Noxious Weeds, Invasive and Non-native Species	68
3.5. Rangeland Vegetation, Soils, Climate and Drought	71
3.6. Riparian-Wetland Resources and Water Quality	79
3.7. Threatened & Endangered Species, Special Status Species, Migratory Birds and Wildlife	89
3.8. Health and Safety	93
3.9. Wild Horse Gather Mitigation Measures	95
4. Cumulative Effects Analysis	96
4.1. Past, Present, and Reasonably Foreseeable Actions	97
4.2. Cumulative Impacts Summary	100
5. Monitoring and Mitigation Measures	104
6. List of Preparers	104
7. Consultation and Coordination	104
8. Public Involvement	104
9. List of References	105
Appendix A: Wild Horse and Burro Gather Plan and Standard Operating Procedures (SOPs)	107
Henneke Equine Body Condition Scoring System	119
Appendix B: Herd Management Area Background Information	123
Appendix C: Standard Operating Procedures for Population-level Fertility Control Treatments	135
Appendix D: Precipitation, Drought and Monitoring	137
Appendix E: Summary of Population Modeling	145
Appendix F: Daily Visitation Protocol and Ground Rules	157
Appendix G: Comprehensive Animal Welfare Policy	163
Appendix H: BLM Special Status Species	168
Map 1: Fish Creek HMA Gather Project Boundary	Section 1.1, page 4
Map 2: 2014 Population Inventory	Section 1.2, page 7
Map 3: Springs and Streams within the Fish Creek HMA	Section 3.6, page 84

Photos on cover clockwise from upper left: Wild horses in Antelope Valley, December 2014; Antelope Valley drought monitoring June 2014; the Slough, July 2014, wild horses in the Fish Creek HMA, June 2014; wild horses running in Antelope Valley, September, 2014 resource flight.

1. Introduction

The Bureau of Land Management (BLM) Mount Lewis Field Office (MLFO) is proposing to conduct a gather within the Fish Creek Herd Management Area (HMA). The gather would involve implementation of a long term management plan with the objective of slowing population growth and achieving the established Appropriate Management Level (AML) over the next ten years. The plan includes the use of multiple methods to initially and subsequently capture and treat mares with Population Growth Suppression (PGS) within the Fish Creek HMA. The Proposed Action includes an initial gather to be completed in 2015 which would include the capture of 500-549 wild horses and removal of 200 excess wild horses from the Fish Creek HMA. Approximately 300-349 wild horses would be released back to the range following the gather. The fertility control vaccine PZP (Porcine Zona Pellucida) or other current formulation would be applied to mares released back to the range (estimated 150-175) to slow population growth. The Proposed Action and Alternatives are discussed in more detail in Section 2.0.

Due to National wild horse and burro program gather priorities and holding facility limitations, the BLM would not achieve the AML during this initial phase, but would continue to treat mares on an ongoing basis to continue to suppress reproduction, reduce population growth rates, and achieve the AML at some point in the future dependent upon the effectiveness and frequency of treatment methods and the ability to remove excess wild horses through future gathers. Although only mares would be administered the fertility control vaccine, the goal is to capture as much of the existing population as possible to maximize the number of mares treated. The gather and treatment activities would involve wild horses both inside and outside of the HMA boundaries within the areas noted on Map 1.

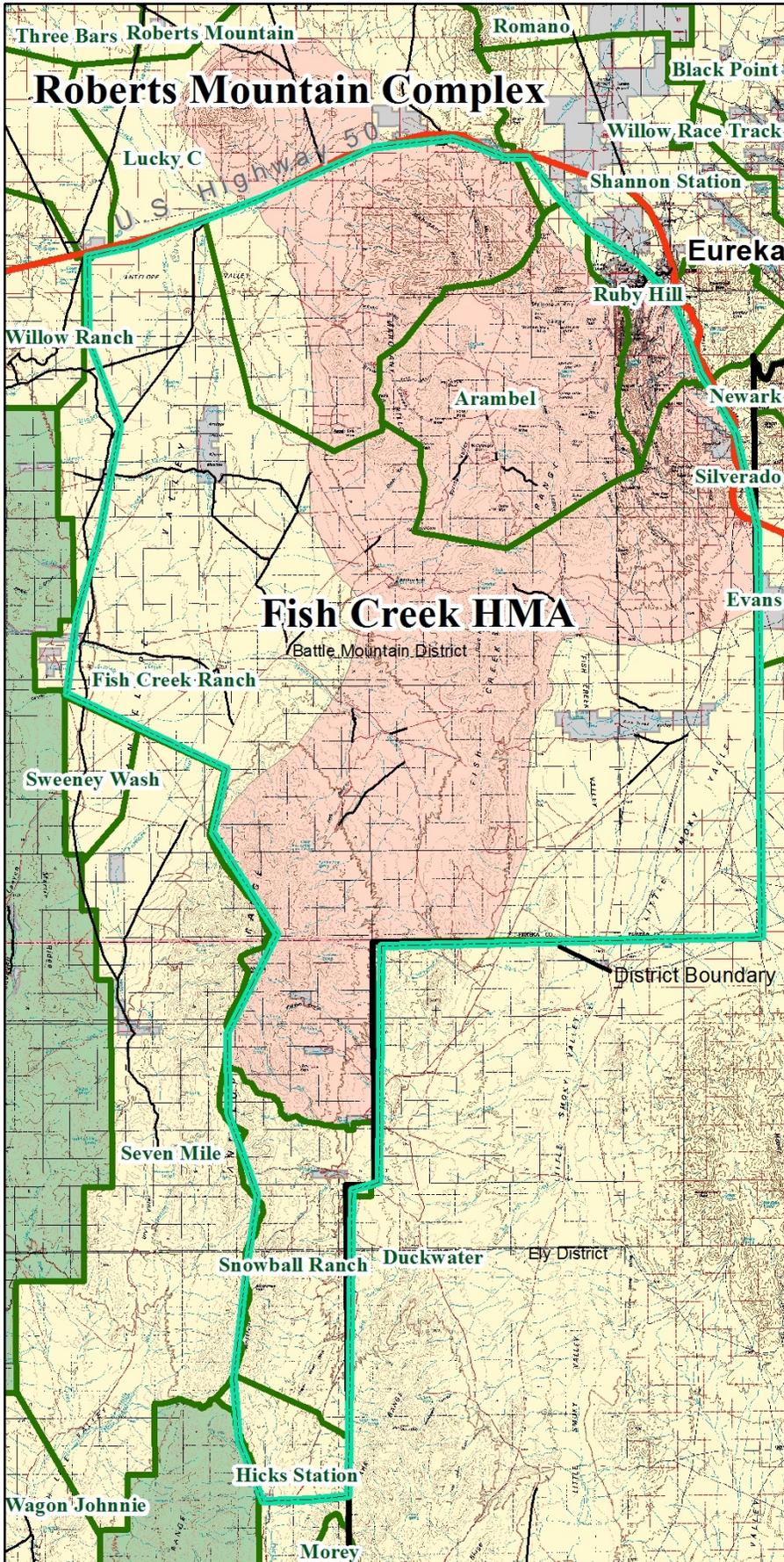
The MLFO may also hold on-site wild horse adoption events during or following the gathers to offer wild horses recently gathered from the Fish Creek HMA to qualified applicants for adoption. During the initial gather proposed for 2015, an estimated 15-20 wild horses would be offered at an on-site event.

This Environmental Assessment (EA) is a site-specific analysis of the potential impacts that could result from implementation of any one of the Action Alternatives. An EA provides sufficient information and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).¹ This EA ensures compliance with the National Environmental Policy Act (NEPA) by providing site-specific analysis of potential direct, indirect, and cumulative effects to the human environment associated with gathering and removing excess wild horses and implementing a PGS program within the Fish Creek HMA. Should a determination be made that implementation of the Proposed Action or Alternative actions would not result in “significant environmental impacts” a FONSI would be prepared to document that determination, and a Decision Record issued providing the rationale for approving the chosen alternative.

1.1. Background

Since the passage of the Wild Free-Roaming Horses and Burros Act (WFRHBA) of 1971, knowledge regarding management of wild horse population levels has increased. By law, BLM is required to remove excess animals once a determination has been made that excess animals are present and removal is necessary to address the current overpopulation. In the past two decades, program goals have shifted beyond establishing a “*thriving natural ecological balance*” (i.e. establishing AML for individual herds) and conducting gathers to achieving and maintaining wild horse populations within the established AML.

1. 40 CFR § Sec. 1508.9.



Fish Creek HMA
 Wild Horse Gather EA
 Project Boundary

Mount Lewis Field Office

December 2014

Map 1

Legend

- Area**
 Fish Creek HMA Gather Boundary
- Major Roads**
 Interstate
 US Highway
 State Highway
 BLM
 County
- District Office Boundary
 Grazing Allotment Boundaries
 Fish Creek Herd Management Area
- Land Owner**
Agency
 BLM
 Forest Service
 Private



so as to manage for a healthy wild horse populations and healthy rangelands. Management actions resulting from shifting the program emphasis include increasing fertility control and adjusting sex ratios to reduce population growth rates and increase gather intervals, improving the accuracy of population inventories and collecting genetic baseline data to support genetic health assessments. Decreasing numbers of excess wild horses removed while reducing population growth rates and ensuring the welfare of wild horses on the range is pertinent to these program goals and consistent with findings and recommendations from the National Academy of Sciences (NAS), American Horse Protection Association (AHPA), the American Association of Equine Practitioners (AAEP), Humane Society of the United States (HSUS), Government Accountability Office (GAO), Office of Inspector General (OIG) and current BLM policy. BLM’s management of wild horses must also be consistent with Standards and Guidelines for Rangeland Health and for Healthy Wild Horse Populations developed by the Northeastern Great Basin Resource Advisory Council (RAC).

To further implement this strategy of increasing population growth controls as a management tool, the current gather schedules emphasize increased application of existing fertility control vaccines. This strategy’s long term goal is to reduce population growth rates so the number of excess wild horses removed from the range are lower and at levels for which adoption demand exists. This EA will include analysis for gathers and population growth suppression that could be implemented within the Fish Creek HMA, and areas outside of the HMA over the next ten years.

The portion of the Fish Creek HMA located south of U.S. Highway 50 is the focus of the analysis within this EA. The portion north of U.S. Highway 50 is to be managed with the Roberts Mountain Complex. Throughout this document, any reference to the Fish Creek HMA is specific only to the portion of the HMA south of U.S. 50. The project area is located in Eureka County, Nevada and shown on Map 1. The area covered by this EA falls within the jurisdictional boundary of the MLFO.

The AML for wild horses within the Fish Creek HMA is displayed in the following table.

Table 1: Fish Creek HMA Appropriate Management Level

HMA/WHT	Allotment	Decision	AML (wild horses)
Fish Creek HMA	Arambel	FMUD ² 2004	32-54
	Fish Creek Ranch	FMUD 2004	45-75
	Lucky C	FMUD 2004	19-32 ³
	Ruby Hill	FMUD 2004	5-9
	Total AML		

In addition to these areas, future gathers could also include gathers of wild horses or burros outside of HMA boundaries in the Hicks Station, Snowball Ranch, or Morey Allotments (Refer to Map 1).

The AML is defined as the number of wild horses that can be sustained within a designated HMA which achieves and maintains a thriving natural ecological balance⁴ in keeping with the multiple-use management concept for the area.

² Final Multiple Use Decision (FMUD).

³ This does not include the portion of the Fish Creek Allotment north of U.S. Highway 50 administered with the Roberts Mountain Complex (AML 6-10).

⁴ The Interior Board of Land Appeals (IBLA) defined the goal for managing wild horse (or burro) populations in a thriving

The AML for the allotments within the Fish Creek HMA was established through the FMUD issued by the MLFO September 27, 2004, following the analysis of monitoring data and completion of the Fish Creek Complex Evaluation and Rangeland Health Assessment and EA #NV062-EA04-69. The AML was determined to be the level of use by wild horses, which would provide for a thriving natural ecological balance and prevent deterioration of the range. The AML was also determined to be the level which would provide for healthy wild horse populations within the capacity of the habitat to provide forage and water. The AML was established following the collection, analysis, and interpretation of many years of monitoring data, which included precipitation, use pattern mapping, trend, production, census/inventory, and carrying capacity analysis, and through coordination with the interested public. Monitoring data including vegetation trend, utilization, water availability, wild horse inventory and distribution, actual use and climate data has been collected through an ongoing monitoring program since the AML was established. Refer to Appendix B for more detailed information about the HMA and to the documents identified in Section 1.5 for more detail about the AMLs for the Fish Creek HMA.

1.2. Estimated Wild Horse Population

The current population of the Fish Creek HMA is based on a helicopter inventory completed in March 2014, and adjusted for estimated foals born during the spring 2014. This inventory included only the portion of the HMA south of U.S. Highway 50, as the portion north will be managed in the future with the Roberts Mountain Complex.

The helicopter inventory resulted in a “direct count” made by three experienced BLM observers and the pilot. The Double Simultaneous Count (DSC) method was also applied. The DSC data has not been processed and the estimated population is based on the direct count. Refer to Map 2 which displays the distribution of wild horses observed during the March 2014 inventory.

The following table shows the estimated population, acres and AML for the Fish Creek HMA. The portion of the HMA north of U.S. Highway 50 is not included in these figures⁵.

Table 2: Fish Creek HMA Population and AML

HMA	Acres	AML	2014 Inventory Direct Count	Estimated 2014 Population	% of AML
Fish Creek	230,675	101-170	478	549	323 ⁶ %

natural ecological balance as follows: “As the court stated in Dahl v. Clark, *supra* at 594, the ‘benchmark test’ for determining the suitable number of wild horses on the public range is ‘thriving ecological balance.’ In the words of the conference committee which adopted this standard: ‘The goal of WH&B management ***should be to maintain a thriving ecological balance between WH&B populations, wildlife, livestock and vegetation, and to protect the range from the deterioration associated with overpopulation of wild horses and burros.’” (Animal Protection Institute of America v. Nevada BLM, 109 IBLA 115, 1989).

5 The portion of the Fish Creek HMA north of U.S. Highway 50 is 19,394 acres in size with an AML of 6-10 wild horses. This area is managed with the Roberts Mountain Complex.

6 The % of AML does include estimated foals that would have been born during the spring 2014 beyond the 15 observed during the inventory in March. The % of AML of only the adults is estimated to be 272%.

Fish Creek HMA
 Wild Horse Gather EA
 2014 Inventory

Mount Lewis Field Office

December 2014

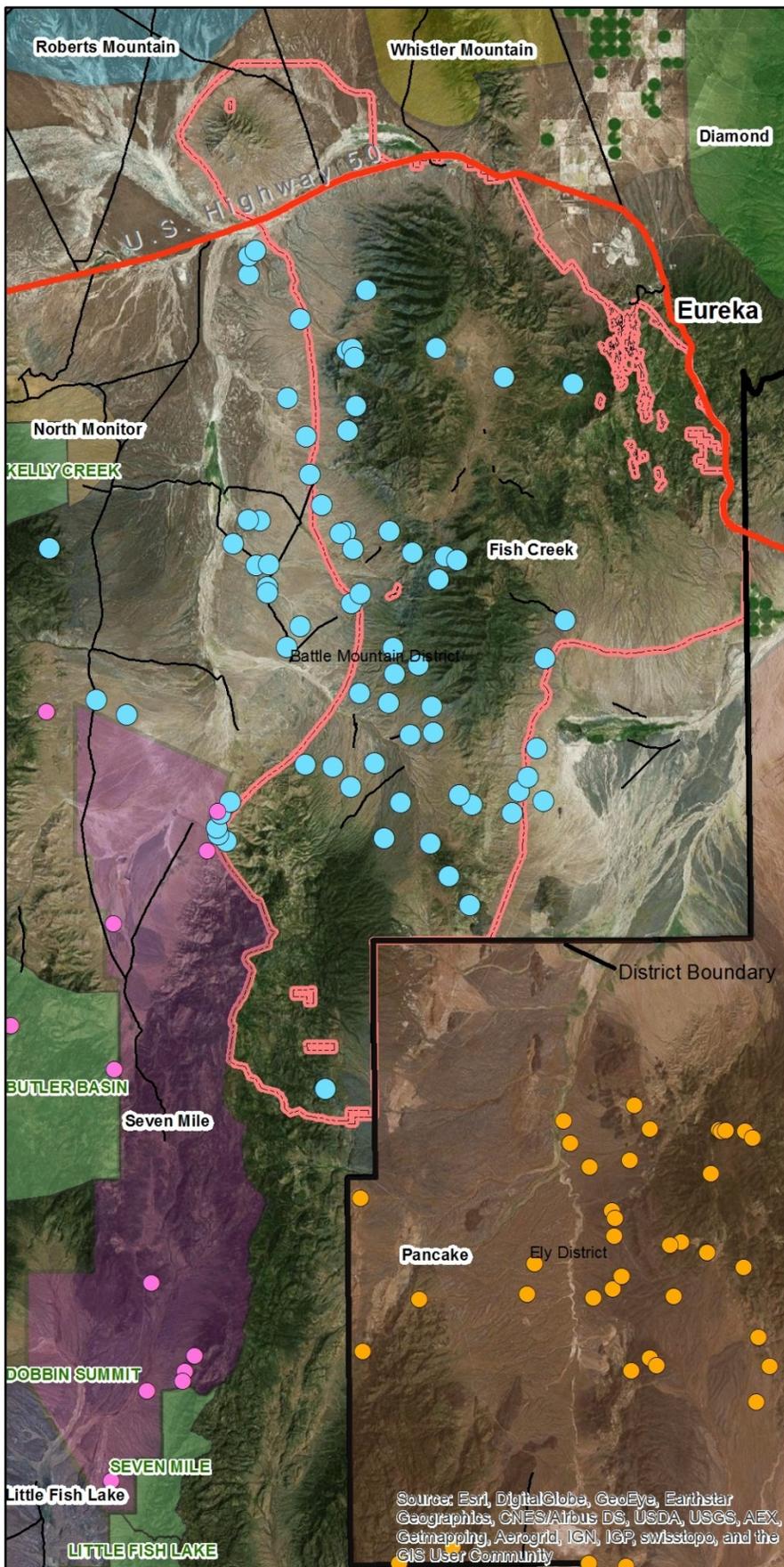
Map 2

Legend

- 2014 Fish Creek Inventory Points
- 2014 Sevenmile Inventory Points
- 2014 Pancake Inventory Points

Major Roads

- Interstate
- US Highway
- State Highway
- BLM
- County
- District Office Boundary
- Fish Creek Herd Management Area
- Nevada USFS Territories
- Other Herd Management Areas



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

The upper level of AML represents the maximum population for which a thriving natural ecological balance and multiple use relationship on the public lands can be maintained. The lower level represents the number of animals that should remain in the HMAs following a wild horse gather in order to allow for a periodic gather cycle. With implementation of PGS, such as fertility control with PZP, management goals include the achievement of a population within the AML range. *“Proper range management dictates removal of horses before the herd size causes damage to the range land. Thus, the optimum number of horses is somewhere below the number that would cause resource damage”* (118 IBLA 75).

The most recent removal operations within the Fish Creek HMA were completed in summer 2005 and winter 2006. Those activities were analyzed within the *Fish Creek Complex Wild Horse Gather EA NV062-EA05-04, January 2005* that included the Fish Creek HMA and several other HMAs US Forest Service (USFS) Wild Horse Territories (WHTs) in the area, which are not included in the current gather proposals. No PGS has been implemented within the Fish Creek HMA since January 1998; at which time a one-year formulation of PZP was given to mares released following a gather. This EA tiers to the prior gather EA and the analysis contained therein is incorporated by reference. The EA is available on the BMD web-site located at this address.

http://www.blm.gov/nv/st/en/fo/battle_mountain_field/blm_programs/wild_horse_and_burro/Fish_Creek_Wild_Horse_Gather.html

1.3. Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to achieve and maintain the established AML through implementation of a population growth suppression program to reduce population growth rates and removal of excess wild horses from within and outside of the HMA boundaries. The proposed action would help prevent undue or unnecessary degradation of the public lands, and protect rangeland resources from deterioration associated with excess wild horses within the HMA, and to restore a thriving natural ecological balance and multiple use relationship on the public lands consistent with the provisions of Section 1333 (a) of the *WFRHBA of 1971*.

This action is needed to achieve a population size consistent with the established AML, remove wild horses from areas not designated for wild horse use, slow population growth rates, remove excess wild horses from within the HMA, protect rangeland resources from deterioration associated with an overpopulation of wild horses, and restore and maintain a thriving natural ecological balance and multiple use relationship on the public lands consistent with the provisions of Section 3(b) (2) of the *WFRHBA*. Further, the action is needed to ensure current and future populations of healthy wild horses.



McCullough Springs water haul, July 2014. A 3000 gallon storage tank keeps the trough full with use of a float.

Based on a review of monitoring, inventory, and all other information available at this time, the MLFO has determined that excess wild horses are present within the Fish Creek HMA and need to be removed in order to comply with the *WFRHBA*, to achieve a population consistent with the established AMLs, meet Land Use Planning (LUP) objectives, and to restore a thriving natural ecological balance by

preventing degradation of rangeland resources resulting from an overpopulation of wild horses. This assessment is based on factors including, but not limited to the following rationale:

- Severe and Extreme drought conditions experienced in the Fish Creek HMA since 2012 as documented by the U.S. Drought Monitor <http://droughtmonitor.unl.edu/>
- Field monitoring since 2012 has documented drought conditions and the effects to the health of water sources and upland vegetation, and availability of forage and water to wild horses.
- The current estimated wild horse population within the Fish Creek HMA exceeds the AML (101-107 wild horses) as established through the 2004 FMUD and wild horses is exceeding the forage allocated to their use.
- Due to drought conditions which have reduced water availability, coupled with the overpopulation of wild horses exceeding AML, water hauling has been necessary since 2012 to ensure adequate water for wild horses, to ward off emergency conditions and maintain wild horse health.
- The Fish Creek HMA has a history of emergency wild horse gathers primarily due to lack of water resources. As a result, the AML was established conservatively to take that into account.
- The current population of wild horses in the Fish Creek HMA is contributing to impacts to rangeland health including heavy utilization of key perennial forage species, trailing and erosion.
- Monitoring completed throughout the Fish Creek HMA since the AML was established, and since the most recent gather in 2006 does not indicate that AML should be adjusted. In fact, monitoring indicates that the established AML should be achieved in order to promote rangeland recovery, and to make progress towards attainment of the RAC Standards and Guidelines for Rangeland Health.
- The 2004 Rangeland Health Assessment involved a comprehensive evaluation of all of the grazing allotments within the HMA, use by wild horses, vegetation conditions and RAC Standards and Guidelines for Rangeland Health. Through this evaluation and subsequent FMUD, the AML was established for the wild horses in the Fish Creek HMA. The AML would be assessed through future Rangeland Health Assessments and the evaluation of monitoring data to determine if adjustments are needed.

The AMLs for the Fish Creek HMA needs to be achieved and maintained to make progress towards improved rangeland health and prevent further decline of important wild horse habitat, to ensure the long-term health and well-being of the wild horses. Maintaining wild horse populations consistent with the established AML would also promote progress towards attainment of RAC Standards and for Rangeland Health, Resource Management Plan and Allotment Specific Objectives. More detail about monitoring in the Fish Creek HMA is presented in Appendix D.

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 or maintained in Long Term Pastures (LTPs). Since the mid-2000s, support for fertility control programs has increased as a strategy to balance wild horse and burro population growth rates with the public adoption demand to control holding costs. 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.

In 2013, the National Academy of Sciences (NAS) issued a report summarizing their findings on various aspects of the wild horse and burro program. The report, *Using Science to Improve the BLM Wild Horse and Burro Program: A Way Forward* (NAS, 2013) concluded that PZP-22 was one of the most

promising methods for fertility control, and that delivery of the one-year liquid formulations via darting could prove useful, though not likely practical in all areas.

The Humane Society for the United States (HSUS) supports the expanded use of fertility control, and specifically the use of the PZP formulation: *“The HSUS strongly supports an increase in the use of fertility control – specifically the Porcine Zona Pellucida (PZP) immunocontraception vaccine – and sex ratio adjustments to slow population growth. This work should immediately be expanded to as many herds as possible as an alternative to gathers and long term holding. With an efficacy rate of over 90%, a comprehensive contraception program could dramatically reduce the financial burden on the agency and allow the BLM to once again focus its resources and efforts on range management programs”* (HSUS 2010).

And, in response to Environmental Protection Agency (EPA) official registration of the contraceptive vaccine: *“This is a win-win-win – good for horses, good for wildlands management, and good for taxpayers. Expanding the use of this proven contraceptive should lead to a significant reduction in wild horse gathering, relocation and costly pasturing in long term holding facilities”*(HSUS, 2012). http://www.humanesociety.org/news/press_releases/2012/02/EPA_Announces_First_Fertility_Control_Vaccine_for_Wild_Horses.html

The American Association of Equine Practitioners (AAEP) issued a BLM Task Force Report in August 2011 following their evaluation of handling procedures and animal welfare at wild horse gathers, and short and long term holding facilities. In the Executive Summary of this report is stated: *“Clearly the mission of the BLM Program – Healthy Ranges, Healthy Horses – is not a simple one. A central issue for all discussions involving the care and management of the wild horse population is controlling the reproductive rate of the wild horses on the range. The AAEP encourages the BLM to prioritize research and application of effective fertility control methods in order to reduce the foaling rate in wild herds”*.

The Proposed Action and the Purpose and Need for the Proposed Action are consistent with these messages and National direction.

1.4. Conformance with Existing Land Use Plans

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that an action under consideration be in conformance with the applicable BLM Land Use Plan. The Proposed Action is in conformance with the Shoshone-Eureka Resource Area (SERA) RMP Objectives, SERA RMP Record of Decision (ROD) dated 1986 and SERA RMP Amendment, ROD 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.

1.5. Relationship to Statutes, Regulations, Policy, Plans or Other Environmental Analysis

The Proposed Action and Action Alternatives are in conformance with the 1971 WFRHBA (Public Law 92-195, as amended), Section 302 (a) and (b) of the Federal Land Policy and Management Act

(FLPMA) of 1976, the Public Rangelands Improvement Act (PRIA) of 1978 (Pub. L. 95-514, Sec. 4), the Code of Federal Regulations (CFR) at 43 CFR §4700, and policies. Applicable excerpts are as follows:

Where the Secretary determines . . . that an overpopulation exists . . . he shall immediately remove excess animals from the range so as to achieve appropriate management levels. Such action shall be taken . . . until all excess animals have been removed so as to restore a thriving natural ecological balance to the range, and protect the range from the deterioration associated with overpopulation.

The law also provides that determinations will be made “*whether appropriate management levels should be achieved by the removal or destruction of excess animals, or other options (such as sterilization, or natural controls on population levels)*”. FLPMA amended the WFRHBA with “*In administering this Act, the Secretary may use or contract for the use of helicopters or, for the purpose of transporting captured animals, motor vehicles. Such use shall be undertaken only after a public hearing and under the direct supervision of the Secretary or of a duly authorized official or employee of the Department*”.

The 1978 amendments to the WFRHBA directs the continued “*policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves and their habitat and to other rangeland values*”.

BLM policy Instruction Memorandum 2010-135, states at Section E: “*During gather or herd management area planning, the authorized officer will consider a range of alternatives to reduce (slow) population growth rates and extend gather cycles for all wild horse herds with annual growth rates greater than or equal to 5%. These alternatives may include (but are not limited to): fertility control, adjustments in the sex ratio in favor of males, a combination of fertility control and sex ratio adjustment, and management of selected HMAs for non-reproducing wild horses*”. Similar direction is also located at Section 4.5.3 of the Wild Horses and Burros Management Handbook H 4700-1.

The Fish Creek HMA discussed in this EA have not been designated as a “range” under 43 CFR § 4710.3-2.⁷

A comprehensive Rangeland Health Assessments and EA was completed in the process of establishing AML for wild horses in the Fish Creek HMA. This EA tiers to these existing documents and will incorporate relevant portions by reference, where applicable. These documents include the following:

- ◆ *Fish Creek Complex FMUD, September, 2004,*
- ◆ *Fish Creek Complex Evaluation and Rangeland Health Assessment, EA #NV062-EA04-69, August, 2004,*
- ◆ *Fish Creek Complex Evaluation and Rangeland Health Assessment, June, 2004,*

⁷There are currently four designated Wild Horse and Burro Ranges in the Western United States that are managed principally for wild horses and burros consistent with 43 CFR 4170.3-2. These are the Pryor Mountain Wild Horse Range in Montana; the Little Book Cliffs Wild Horse Range in Colorado; the Nevada Wild Horse Range and the Marietta Wild Burro Range in Nevada. Only the BLM Director or Assistant Director (as per BLM Manual 1203: Delegation of Authority), may establish a Wild Horse and Burro Range after a full assessment of the impact on other resources through the land-use planning process.

1.6. Conformance with Rangeland Health Standards and Guidelines

The Proposed Action is consistent with the Standards and Guidelines for Rangeland Health as developed by the Northeastern Great Basin RAC, specifically Standard 5: Healthy Wild Horse and Burro Populations.

STANDARD 5. HEALTHY WILD HORSE AND BURRO POPULATIONS:

Wild horses and burros exhibit characteristics of a healthy, productive, and diverse population. Age structure and sex ratios are appropriate to maintain the long term viability of the population as a distinct group. Herd management areas are able to provide suitable feed, water, cover and living space for wild horses and burros and maintain historic patterns of habitat use.

As indicated by:

Healthy rangelands that provide sufficient quantities and quality of forage and water to sustain the appropriate management level on a yearlong basis within a herd management area.

Wild horses and/or burros managed on a year-long basis for a condition class greater than or equal to five to allow them normal chances for survival in the winter (See glossary for equine body conditioning definitions).

Highly adoptable wild horses and burros that are readily available from herd management areas.

Wild horse and burro herds that exhibit appropriate age structure and sex ratio for short and long term genetic and reproductive health.

GUIDELINES:

- 5.1 Implement the objectives outlined in the Wild Free-Roaming Horses and Burros Tactical Plan for Nevada (May 1999).*
- 5.2 Manage for wild horses and/or burros in herd management areas based on the capability of the HMA to provide suitable feed, water, cover and living space for all multiple uses.*
- 5.3 Set appropriate Management Levels based on the most limiting habitat factor (eg. available water, suitable forage, living space and cover) in the context of multiple use.*
- 5.4 Manage herd management area populations to preserve and enhance physical and biological characteristics that are of historical significance to the herd.*
- 5.5 Manage wild horse and burro herds for short and long term increases and to enhance adoptability by ensuring that wild horses and burros displaying desirable traits are preserved in the herd thus providing a reproductive base to increase highly adoptable horses and burros for future demands.*
- 5.6 Identify and preserve historic traits and characteristics within the herd which have proven to be highly desirable by the adoption public to increase the long term availability of animals bearing these features.*
- 5.7 Wild horse and burro selective removal criteria are modified on a per herd basis to correct deficiencies in population age and sex ratios which threaten short and long term genetic diversity and reproductive health.*

The complete NE Nevada RAC Standards and Guidelines are available here:

http://www.blm.gov/nv/st/en/res/resource_advisory/northeastern_great/s_gs/wild_horses.html

1.7. Decision to be Made

The authorized officer shall determine whether or not to implement wild horse gathers to implement population growth suppression, achieve and maintain the established AML and to remove excess wild horses from the range. The authorized officer may utilize portion(s) of any alternative to make their decision that they feel will fulfill the purpose and need for the action at hand.

The decision would not establish or adjust the AML, which was established through previous planning-level decisions. Monitoring and other available information confirms that an excess population of wild horses exists within the Fish Creek HMA and need to be removed in order to preserve a thriving natural ecological balance. Based on the available monitoring information that shows the excess wild horses are impacting rangeland resources, it is not appropriate at this time to make adjustments to AML. Future decisions regarding long-term management within the HMA would continue to be accomplished with public involvement through a Herd Management Area Plan or other activity level management plans specific to the HMA based on available monitoring data. Additionally, the decision would not adjust livestock use, which also has been allocated through prior planning-level processes and decisions, and for which any adjustments must be made through the applicable regulatory procedures set forth at 43 CFR § 4100.

The No Action Alternative would not achieve the Purpose and Need identified in Section 1.3. However, it is analyzed in this EA to provide a basis for comparison with the action alternatives, and to assess the effects of not conducting a gather at this time. The No Action Alternative would not be consistent with the requirement under the WFRHBA to remove excess wild horses and burros from public lands and is also not in conformance with regulatory provisions for management of wild horses and burros as set forth at 43 CFR § 4700. The No Action Alternative would not result in achievement of the established AML or progress towards the improvement of rangeland conditions.

1.8. Scoping and Identification of Issues

Comments will be requested following issuance this Preliminary EA and will be incorporated, as appropriate, into this Final EA. The following issues were identified as a result of internal scoping relative to the BLM's proposals for gathers and fertility control treatment of wild horses (mares) in the planning area, as well as issues brought up by members of the public through other management activities within the District, and those comments received on Wild Horse and Burro Gather EAs within Nevada.

1. Potential impacts to individual wild horses and the herd.
 - Projected population size and annual growth rate
 - Expected effects to individual wild horses from handling stress
 - Expected effects to herd social structure
 - Expected effects of proposed fertility control application
 - Potential effects to genetic diversity
 - Potential effects to animal health and body condition
2. Potential impacts to vegetation/soils, and riparian/wetland.
 - Expected forage utilization, and changes in vegetation trend
 - Potential effects to vegetation/soils and riparian/wetland resources – indirect and direct
3. Potential impacts to wildlife, migratory birds, and special status species and their habitat.

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

Other issues of concern include the following:

- Drought impacts to forage and water sources
- Animal health due to drought and limited water sources

2. Proposed Action and Alternatives

2.1. Introduction

The following Section details the Proposed Action and Alternatives that will be analyzed in this EA, as well as alternatives considered, but not carried forward for analysis.

The Proposed Action and sequential Alternatives were developed to meet the Purpose and Need (i.e. to achieve and maintain AML, manage wild horses within identified HMA boundaries, remove excess wild horses from within and outside of HMA boundaries, reduce population growth rates, and ensure a thriving natural ecological balance). Additionally, these alternatives considered current National Wild Horse and Burro Program policy that directs the BLM to implement population growth control measures during gathers in an effort to reduce population growth rates so as to reduce gather frequency and the number of excess wild horses that ultimately must be removed from the range in future gathers in order to maintain populations at AML. The Proposed Action and Alternatives were developed in consideration of the issues presently and previously identified during internal and external scoping and agency consultation. The following table provides a brief overview of the Alternatives which are further described in detail in Section 2.2.

Table 3: Overview of Proposed Action and Alternatives

Alternative	Description
Proposed Action: Multiple Gather Methods with Fertility Control	Over a ten year period, achieve and maintain a population within the AML range ⁸ (101-170 wild horses) through the implementation of the following: <ul style="list-style-type: none"> • various gather methods (helicopter, bait/water trap), • selective removal of excess wild horses, • population growth suppression (PGS) using fertility control treatments (ZonaStat-H, PZP-22 or most current formulations)
Alternative 1: No Fertility Control	Over a ten year period, achieve and maintain a population within the AML range (101-170 wild horses) through the implementation of the following: <ul style="list-style-type: none"> • various gather methods (helicopter, bait/water trap), • selective or non-selective removal of excess wild horses • <u>no</u> implementation of fertility control.
Alternative 2: Fertility Control with No Removals or Use of Helicopter	Over a ten year period implement the following: <ul style="list-style-type: none"> • PGS using fertility control treatments (ZonaStat-H, PZP-22 or most current formulations) • <u>no</u> use of helicopter drive trapping and no removal of wild horses • bait and water trapping, darting

⁸ Should the AML for the Fish Creek HMA be adjusted following future analysis and decision, the AML targets would be adjusted accordingly.

Alternative	Description
Alternative 3 Helicopter Catch, Treat and Release with Limited Removals and Sex Ratio Adjustment	Over a ten year period, achieve and maintain a population within the AML range (101-170 wild horses) through the implementation of the following: <ul style="list-style-type: none"> • helicopter drive trapping • selective removal of excess wild horses • PGS using fertility control treatments (PZP-22 or most current formulations) • Sex ratio adjustment to favor studs.
Alternative 4: No Action	No gather or treatment for fertility control would occur.

2.2. Proposed Action and Alternatives in Detail

2.2.1. Proposed Action: Multiple Gather Methods with Fertility Control

The objective of the Proposed Action is to achieve the Purpose and Need through implementation of a ten year plan which includes the implementation of several gather methods, application of population growth suppression (PGS), and removal of adoptable excess wild horses.

The BLM would utilize helicopter drive trapping, and bait and water trapping to implement a PGS program and achieve and maintain the AML range (101-170 wild horses) through selective removal.

Due to National funding and holding space limitations, and anticipated gather efficiencies, the BLM cannot achieve the goals of the Proposed Action and attain the established AML through a single gather in 2015. The 2015 gather would therefore become the first phase in a long term population management strategy designed to address large scale wild horse gathers while still achieving BLM’s management goals of attaining AML, reducing population growth rates, and obtaining a thriving natural ecological balance on the range as identified within the WFRHBA.

Under the Proposed Action, the BLM would gather approximately 500-549 wild horses in the initial 2015 gather event in order to treat mares with the 22-month time release pelleted PZP (PZP-22) or current formulation. The initial 2015 gather would be conducted via helicopter drive trapping. Younger, adoptable wild horses including weanlings, yearlings, and two and three year old horses would be the primary target for removal. The goal for removal would be 200 horses, based on National holding space availability and National gather priorities. The remaining 300-349 wild horses would be released to the range. Of those released, it is estimated that 150-175 would be mares treated with fertility control PZP-22 or current formulation. The sex ratio objective under the Proposed Action is for a 50:50 mare to stud ratio, without any adjustment in the ratio to favor studs.

Long term management goals for the Fish Creek HMA includes achievement and maintenance of the established AML (101-170 wild horses) and continued implementation of PGS. Under the Proposed Action, the BLM would continue to implement fertility control through bait and water trapping, darting and helicopter drive trapping. Darting could be utilized to booster treat mares initially treated with PZP-22. Bait and water trapping could be used to booster mares and retreat or initially treat mares with PZP-22, and provide for limited removals. Helicopter gathers would occur as needed to continue the population growth control protocols, remove excess wild horses and to achieve or maintain the established AML. Removals of wild horses could be implemented through the life of the plan to achieve the management targets, to relieve resource concerns and/or remove concentrated groups of excess wild horses both inside and outside the boundaries of the Fish Creek HMA.

Fertility control would be applied to all the released mares to decrease the future annual population growth and reduce the number of excess wild horses that would have to be removed during future gathers. The procedures to be followed for implementation of fertility control are detailed in Appendix C. Refer to Section 2.3.1 for more information.

A method to apply fertility control booster treatments through darting is included under the Proposed Action. BLM staff and approved volunteers would be certified to administer PZP via darting by an approved instructor in order to continue treatment of mares and maintain reduced population growth rates without the need for physically gathering wild horses. Booster treatments could occur year round and would be timed to occur prior to the existing PZP treatment is no longer effective.

Subsequent helicopter gather activities could be conducted during the period of July through February and in a manner consistent with those described in Section 2.3.

By implementing of a phased approach utilizing multiple gathering methods, the BLM would be able to reduce the population growth rate over time, and continue to treat an increasing number of mares with fertility control. The Proposed Action is consistent with current BLM policy and direction to reduce gather frequencies and the number of animals that need to be removed from the range over time through application of population growth suppression.

Table 4 displays the anticipated gather and removal figures. Because the Proposed Action involves a phased approach, Table 4 displays the estimated initial gather and removal numbers given current funding and holding space limitations.

Table 4: Estimated Populations and Proposed removals under Proposed Action (Phase I)

HMA	AML	Est. Population	Est. Gather Number ⁹	Est. Un-gathered	Est. treated mares	Est. to Remove	Est. Release	Est. Post-gather
Fish Creek	101-170	549	500-549	0-49	150-175	200	300-349	300-349

2.2.2. Alternative 1: Helicopter Gathers without Fertility Control

Alternative 1 is similar to the Proposed Action in that it includes the use of multiple gather methods over the next 10 years to capture wild horses, including helicopter drive trapping and water or bait trapping. This alternative includes both selective and non-selective removal options, however does not include the application of PGS such as PZP-22 or ZonaStat-H. Achievement of the population objectives would be through removals only. The removal goals would include achieving and maintaining AML.

As with the Proposed Action, National funding and holding space limitations, precludes the ability to remove adequate number of excess wild horses to achieve the established AML in a single gather in 2015. The 2015 gather would become the first phase to remove excess wild horses towards the AML goal. Gather and removal frequency would depend on National funding and holding availability, but could occur every 3-5 years. The number of excess wild horses to be removed in future gathers would be based on actual population increase, wild horse inventory flights and other relevant monitoring data.

9. Estimated gather numbers based on ability to capture in excess of 90% of the population, which could vary depending on terrain, animal location, weather conditions, and animal movement experienced before and during the gather.

Periodic gathers would be completed throughout the life of the document to implement selective removal of excess wild horses to achieve maintain AML. Selective removal goals would be similar to those identified under the Proposed Action, and an emphasis would be placed on only removing more adoptable, younger wild horses. However, the removal numbers needed to achieve AML in future gather events may result in the need to remove wild horses in excess of 5 years of age or older. During the initial gather in 2015, selective removal would target horses 3 years of age or younger. In order to achieve these goals, as much of the entire population would be gathered to allow the selection of only this age group for removal, and to allow for mostly adoptable horses to be transported to BLM preparation facilities for adoption.

If necessary to reach population goals, non-selective, or gate cut gathers could be implemented in the future whereas only a sufficient number of horses to achieve the removal target are actually captured, and no selective removal occurs. For example, if a gather was planned to remove 200 horses, the gather activities (helicopter or bait/water trap) would only be conducted until 200 horses were captured and removed. This would include the removal of all horses regardless of age, leaving the remaining population undisturbed.

If gather efficiencies utilizing a helicopter do not achieve the desired goals of Alternative 1, water/bait trapping may be utilized throughout the year during the life of the plan to remove sufficient numbers of wild horses to achieve the management targets, to relieve resource concerns and/or remove concentrated groups of excess wild horses both inside and outside the boundaries within the Fish Creek HMA.

Since PGS would not be implemented at this time, standard monitoring and inventory would occur, without additional monitoring to document animal movement or use patterns within the HMA. No horses would be freemarked for future monitoring, and darting would not occur.

Alternative 1 is not consistent with BLM policy or National direction for management of wild horses and burros, nor is consistent with current NAS recommendations. The following table displays the anticipated gather and removal numbers for Phase I.

Table 5: Estimated Populations and Proposed removals under Alternative 1 (Phase I)

HMA	AML	Est. Population	Est. Gather Number ¹⁰	Est. Un-gathered	Est. treated mares	Est. to Remove	Est. Release	Est. Post-gather
Fish Creek	101-170	549	500-549	0-49	0	200	300-349	300-349

2.2.3. Alternative 2: Fertility Control with No Removals or Use of Helicopter

Though components of Alternative 2 resemble those in other Alternatives, it is quite different in that it does not include the use of helicopter drive trapping or the removal of any wild horses from the range. The BLM rarely considers bait and water trapping as the sole gather methods due to the fact that bait and water trapping are inefficient and unrealistically time consuming in large, remote wild horse populations. It is provided for analysis as “Fertility Control Only” Alternative.

No initial helicopter gather would be implemented within the Fish Creek HMA. Bait and water trapping could occur year round and would be implemented as described under the Section 2.3. Initial fertility

10. Estimated gather numbers based on ability to capture in excess of 90% of the population, which could vary depending on terrain, animal location, weather conditions, and animal movement experienced before and during the gather.

control treatment and freezemarking of horses would be accomplished as the horses are initially bait and water trapped. Documentation and recordkeeping would require that the mares are easily identifiable. With an existing population estimate of 549 wild horses, it is unrealistic to believe that all mares could be effectively documented and tracked via photo documentation alone. In order to facilitate the freezemarking, aging, genetics sampling and fertility control application, the groups of horses gathered in the bait or water traps would be transported to a central holding corral where a working chute would be used to restrain the horses for the needed work to be accomplished before they were released back to the range.

Booster treatments could be applied through darting by certified applicators. Bait and water trapping would continue to be accomplished to implement booster treatment, initial treatment, re-treatment and identification of horses as necessary. Monitoring and tracking would be as described under the other fertility control alternatives, and trail camera photo analysis would be valuable in assessing usage patterns at waters and bait stations to improve treatment strategy and implementation.

Table 6: Estimated Populations and treatment under Alternative 2 (Phase I)

HMA	AML	Est. Population	Est. Gather Number ¹¹	Est. Un-gathered	Est. treated mares	Est. to Remove	Est. Release	Est. Post-gather
Fish Creek	101-170	549	500-549	0-49	251-275	0	500-549	500-549

Though it is highly unlikely that all 500-549 of the wild horses could be effectively captured by bait and water trapping within the first year, for the purposes of the population modelling and this analysis, the assumption was made that a high percentage of the horses would be captured and treated the first year, with a high percentage of mares being treated/boostered annually via darting and bait and water trapping thereafter in order to show the highest possible effectiveness of this Alternative at controlling population growth, albeit unrealistic at this time within this HMA.

2.2.4. Alternative 3: Helicopter Catch, Treat and Release with Limited Removals and Sex Ratio Adjustment

Alternative 3 would implement a ten year plan consisting of helicopter drive trapping and the implementation of population growth suppression (fertility control) to achieve the AML (101-170 wild horses) over the next 10 years. This Alternative also includes sex ratio adjustment to favor studs at a 60:40 ratio over mares. This alternative is similar to other ongoing Catch, Treat and Release programs implemented within other Nevada HMAs; with the primary capture method identified as helicopter drive trapping.

Helicopter would be used as the sole gather method. Removals of wild horses could be implemented through the life of the plan to achieve the management targets, to relieve resource concerns and/or remove concentrated groups of excess wild horses both inside and outside the boundaries of the Fish Creek HMA. Small scale bait and water trapping throughout the year could be utilized but would not be the primary tool used to capture wild horses in future gather activities, and darting would not be used as a tool to continue implementation of fertility control.

11. Estimated gather numbers based on ability to capture in excess of 90% of the population, which could vary depending on terrain, animal location, weather conditions, and animal movement.

The gather and removal numbers for the first phase implemented in 2015 would be identical to those described for the Proposed Action, with a target removal of 200 wild horses and a goal to capture as much of the population as possible to implement fertility control (PZP-22 or current formulation). Selective removal would be used to target horses aged at 3 years old and younger for removal in the initial phase. Gather activities for helicopter drive trapping would be as described elsewhere in this section.

Future gathers would implement selective removal to the extent possible to target only younger age groups (≤ 4 years of age) for removal in order to ensure that highly adoptable wild horses are transported to BLM preparation facilities and that less adoptable horses are not.

Gather frequency would depend on National funding and holding availability, but could occur every 2-3 years (starting in 2017 or 2018) for a period of ten years to continue the population growth control protocols of treating and/or re-treating mares with fertility control and to achieve and maintain low range AML by using limited removals of excess wild horses. The number of excess wild horses to be removed in future gathers would be based on actual population increase, wild horse inventory flights and other relevant monitoring data.

Because the 2015 gather would not allow for low AML to be achieved initially, in order to reduce resource impacts and promote recovery and improvement of rangeland health, the sex ratio of the 2015 post gather population would be adjusted to 60% studs to further slow population growth until another gather could occur to achieve the low AML. If future budget and holding space limitations continue to preclude achievement of low AML, sex ratio adjustment and fertility control measures would continue to be implemented. If follow-up gathers are able to achieve low AML, only fertility control would be implemented as a population control, with sex ratio adjustment reserved for those follow-up gathers that do not allow for achievement of the low AML.



A group of roan horses in the Fish Creek HMA, 2005.

Table 7 below identifies the anticipated gather and removal numbers under the first phase of this Alternative.

Table 7: Estimated Populations and treatment under Alternative 3 (Phase I)

HMA	AML	Est. Population	Est. Gather Number ¹²	Est. Un-gathered	Est. treated mares	Est. to Remove	Est. Release	Est. Post-gather
Fish Creek	101-170	549	500-549	0-49	150-175	200	300-349	300-349

12. Estimated gather numbers based on ability to capture in excess of 90% of the population, which could vary depending on terrain, animal location, weather conditions, and animal movement experienced before and during the gather.

2.2.5. Alternative 4: No Action Alternative (No Wild Horse Gather)

Under the No Action Alternative, a wild horse gather would not be conducted within the Fish Creek HMA. Wild horse populations would not be actively managed at this time and excess wild horses would not be removed from areas outside of HMA boundaries that are not designated for use by wild horses. No population growth suppression program would be implemented within this HMA.

The current estimated population of 549 wild horses would continue to increase at an estimated rate of 18-20% annually. The established AML range of 101-170 within the Fish Creek HMA would continue to be exceeded. Additionally, implementation of the No Action Alternative would not result in progress towards attainment of the RAC Standards for Rangeland Health, or LUP Objectives for the Fish Creek HMA and associated allotments or progress towards the improvement of rangeland conditions.

The No Action Alternative would not achieve the Purpose and Need identified in Section 1.3. However, it is analyzed in this EA to provide a basis for comparison with the action alternatives, and to assess the effects of not conducting a gather at this time. The No Action Alternative would not be consistent with the requirement under the WFRHBA to remove excess wild horses and burros from public lands and is also not in conformance with regulatory provisions for management of wild horses and burros as set forth at 43 CFR § 4700.

2.3. Management Actions Common to Multiple Alternatives

2.3.1 Population Growth Suppression (Proposed Action, Alternative 2 and 3)

The BLM currently uses two PZP formulations for fertility control of mares. The most effective is a one-year liquid vaccine that must be re-administered annually. This vaccine, known as ZonaStat-H, was registered in February 2012 with the EPA for preventing pregnancy in wild horse mares.

http://www.humanesociety.org/news/press_releases/2012/02/EPA_Announces_First_Fertility_Control_Vaccine_for_Wild_Horses.html

Developed in collaboration with Dr. Jay F. Kirkpatrick, Director of the Science and Conservation Center in Billings, MT, ZonaStat-H is based on PZP, a protein which when injected, produces antigens that bind the sperm receptor sites and render the animal infertile. <http://www.pzpinfo.org/pzp.html>

It is not feasible to gather wild horse herds every year to administer the ZonaStat-H form of the vaccine. In a few herds, horses can be treated by darting each year, but darting is generally not practical for BLM because it is difficult to approach most wild horses closely enough on Western rangelands. For this reason, the BLM mostly uses a longer-lasting, 22-month, pelleted PZP agent (PZP-22). The pelleted vaccine has been successfully administered by darting into a few mares, but typically it is hand-injected after the mares have been captured. This method of treatment means that during gathers, more mares need to be captured (for treatment and release) than would actually be removed from the range if removal was the only goal. While this is usually possible, it can be difficult to capture a large enough fraction of the population so that significant numbers can be treated and released. Maximum effectiveness of PZP-22 is achieved when the mares are treated during a three- to four-month window prior to foaling.

http://www.blm.gov/wo/st/en/prog/whbprogram/science_and_research/fertility_control.html

The procedures to be followed for the implementation of fertility control are detailed in Appendix C. For the PZP-22 formulation administered during gathers, each released mare would receive a single dose of the two-year PZP contraceptive vaccine. The PZP-22 components include a liquid dose of the

ZonaStat-H and a vaccination of time release pellets that dissolve at 1, 3 and 12 months after application, with a potential effectiveness of 22 months. The pellets are applied to the mare with a large gauge needle and jab-stick into the hip. At this time, a proven method is not available to apply the pellets via darting, though trials are underway to explore appropriate mechanisms for the delivery of the pellets by darting.

Booster treatment with ZonaStat-H (or other current formulation) may be necessary on an annual basis to maintain effective treatment success.

Applicators would dart mares through multiple methods on the range. Blinds made of camouflaged material would be used at water sources to obscure applicators and allow efficient treatment of as many mares as possible.

It is anticipated that bait and water trapping and periodic helicopter removals would be necessary to continue to apply identifying freezemarks to mares born on the range, collect samples for fertility control and remove excess wild horses to achieve and maintain the established AML.

References in this document to PZP include the PZP-22 and ZonaStat-H formulations discussed above. Other formulations approved for use by BLM may be applied through future gathers or darting activities.

2.3.2. Helicopter Drive Trapping (Proposed Action, Alternative 1 and 3)

The Proposed Action, and Alternatives 1 and 3 include the use of helicopter drive trapping to gather wild horses. In addition to helicopter, roping from horseback could also be used when necessary.

The initial proposed gather could take place in January-February 2015 and would be completed in accordance with this EA, Wild Horse and Burro Gather Plan and Standard Operating Procedures (SOPs; Appendix A) and BLM's Comprehensive Animal Welfare Policy (CAWP) IM WO 2013-059, (Appendix G) in addition to any additional BLM State or National policy and guidance in place at that time.



Deer and wild horses at McCullough Spring prior to water hauling in 2012, taken with trail camera.

The BLM would be responsible for contractor compliance to National contract specifications including SOPs. The BLM is committed to the well-being and responsible care of wild horses and burros we manage. At all times, the care and treatment provided by the BLM and the gather contractors will be characterized by *compassion and concern* for the animal's well-being and welfare needs. BLM Wild Horse and Burro Specialists would be on site at all times during gather operations to ensure wild horse safety and humane

treatment. Measures to reduce stress and injury and ensure the highest levels of safety are described throughout Section 2.3, 3.2, 3.9 and Appendix A.

Capture success may vary depending on topography, weather, and location of the wild horses, and their level of awareness of humans. Under the Proposed Action and Alternative 3, the BLM would attempt to gather a sufficient number of wild horses beyond the excess wild horses to be removed, so as to allow for the application of fertility control to all breeding age mares that are released.

A USDA Animal and Plant Inspection Service (APHIS) or other veterinarian would be on-site during helicopter gathers, as needed, to examine animals and make recommendations to the BLM for care and treatment of wild horses.

2.3.3. Bait and Water Trapping (All Action Alternatives)

Future gather activities could be achieved through bait or water trapping if determined to meet the removal and fertility control treatment objectives. Bait/water trapping would be completed by using a qualified bait/water trapping contractor, or would be completed “in-house” by BLM staff.

Bait or water trapping would involve placement of capture corrals at water locations or strategically located “bait stations”. Multiple gather sites (trap corrals) would be used. Trap corrals may be left in place for several months to allow wild horses to become acclimated to the structures. Bait and water trap corrals would either be manually operated by humans or affixed with triggers to automatically close the gates as wild horses enter the corrals. During bait and water trapping operations, corrals would be checked daily. Real-time remote cameras could also assist with monitoring capture success.

Once captured, BLM could apply booster treatments (Under the Proposed Action and Alternative 2) to mares within the corral through darting. Alternately, groups of horses could be transported to central holding corrals where horses could be examined for age and health, and previously untreated and unidentified mares receive freezemarks, fertility control treatment and sampled for genetics. Once treated, the group of horses would be released back to the range together. If wild horses are identified for removal at this time, they would be sorted off into separate pens and cared for as described for helicopter gathers (refer to Appendix A).

2.3.4. Fertility Control Booster Treatment (Proposed Action, Alternative 2)

Booster treatment with ZonaStat-H (or other current formulation) may be necessary on an annual basis to maintain effective treatment success. It is anticipated that annual darting of 100% of all identified mares would not be feasible. Implementation of a solid darting strategy could result in treatment of an estimated 85-90% of the identified mares annually.

Applicators would dart mares through multiple methods on the range. Blinds made of camouflaged material would be used at water sources to obscure applicators and allow efficient treatment of as many mares as possible.

2.3.5. Animal Identification and Monitoring

Standard herd health and characteristics data would be collected as part of continued monitoring of the wild horse herds. Other data, including sex and age distribution, condition class information (using the Henneke rating system), color, size and other information may also be recorded for all gathered wild horses.

Hair samples would be collected from an adequate sample size of released wild horses during the initial gather project in order to monitor the genetic health of the wild horses. The initial sampling would be no less than 25% of the horses released; however all wild horses released to the range during the initial

gather could be sampled. Future bait/water or helicopter gathers could involve sampling a portion or all of the horses released to the range to continue monitoring of the genetic variability of the HMA.

Population inventories and routine resource/habitat monitoring would be completed between gather cycles to document current population levels, growth rates, and areas of continued resource concern (wild horse concentrations, riparian impacts, over-utilization, etc.) on an ongoing basis. Helicopter inventory flight may be conducted prior to or following the gather or trapping activities to collect information about wild horse numbers and distribution within the HMA.

Standard procedure for fertility control application is to apply a two letter freezemark to the left hip of each mare receiving treatment with additional identifying freezemarks to the neck to indicate repeated treatments.

In addition to standard information, additional data could be collected for released wild horses in order to facilitate the future management of the Fish Creek HMA and the fertility control program. This information could include additional data about the treated and released mares, and photo documentation of released mares and studs.

In addition to standard fertility control freezemarks, wild mares treated with fertility control could receive an additional freezemark for future identification. This would be through a 1-3 number freezemark on the hip or other appropriate location.

The identifying freezemark would be vital to tracking mare health, treatment effectiveness and allowing for documentation of future booster treatments of PZP. Freezemarks applied on the mares would enable staff to track the treatment status of each mare, as well as record other pertinent data such as body condition, pregnancy or lactation status, and other data. It is possible that studs released to the range may also be given an identifying freezemark, which could be a 1-3 letter or number to allow improved data collection about movement and behavior patterns in the future.

The use of trail cameras at springs and other key locations would provide ongoing data about wild horse use patterns, body condition and health, and presence or absence of foals. Unique freezemarks on treated mares, would facilitate tracking and documentation of movement and behavior patterns through analysis of trail camera photos. The data compilation and analysis would be used to assess the effectiveness of treatment modes and make adjustments to the PGS program. Data would also be assessed to monitor and track herd and rangeland health.

Should tracking collars or other approved tracking mechanism such as GPS microchip, become available that are shown to be safe for use in wild horse herds, select number of released horses could be fitted with collars or chips to further facilitate data collection related to movement patterns.

It is anticipated that bait and water trapping and periodic helicopter removals would be necessary to continue to apply identifying freezemarks to mares born on the range, and collect samples for genetics analysis.

2.3.6. Activities Common to Bait/Water Trapping and Helicopter Gathers

All gather activities would be conducted in a manner consistent with those described in this document and in conformance with the SOPs in Appendix A, BLM's CAWP IM WO 2013-059, in addition to any additional BLM State or National policy and guidance in place at that time. If a contractor is used, the

BLM would be responsible for contractor compliance to national contract specifications including SOPs. Funding limitations and competing priorities may require delaying the future follow-up gathers and population control activities (as identified). Future gathers could be conducted in either summer or winter months.

During gathers, horses would be sorted by age and sex, and selected either for release back to their respective HMA identified as excess for transport to BLM wild horse adoption, preparation or holding facilities, where they would be prepared for adoption and/or sale to qualified individuals who can provide them with a good home or for transfer to long-term grassland pastures (LTPs).

Objectives for the Fish Creek HMA regardless of gather method include ensuring that the population consist of diverse age groups and reflect the historic range of characteristics for this HMA. Wild horses would also be selected for release back to the Fish Creek HMA, based on health, demeanor, and other desirable historic characteristics.

Through gathers and population growth suppression (Proposed Action, Alternative 2 and 3), the goal is to reduce population growth, and reduce the number of excess wild horses that need to be removed through future gathers in order to achieve and maintain the established AML. To that end, priority for removal of wild horses gathered from within the Fish Creek HMA would be given to animals that were four years of age or younger, and more desirable for adoptable. It is anticipated that most animals released would be 5-20 years of age, and that less adoptable horses, due to age, would not be transported to BLM holding facilities. An emphasis would be placed on releasing older mares and stallions (15+ years of age) back into the HMA to avoid the stress of transportation and handling on older wild horses. However, if necessary to achieve the post-gather population objective, animals within the older age class could be selected for removal, particularly if wild horses are gathered from areas outside of the HMA boundaries (such as Hicks Station and Snowball Allotments).

Most foals would be 6-9 months of age or older and of weaning age. In order to transported only the most highly adoptable wild horses to BLM adoption preparation or holding facilities weanable foals and yearlings may be the focus for removal during future gathers, particularly if small removal targets exist. If foals too young to wean are encountered, they would either be transported to the BLM holding facilities with their mothers, or released with their dam if it the safety of the foal could be ensured.

The number of excess wild horses to be removed in future gathers would be based on estimated population increase, wild horse inventory flights and other relevant monitoring data. Future gathers would involve notification to the interested public.

Wild horses captured from outside of the HMA boundaries or from private lands could be removed regardless of characteristics or age and may not be released back into the HMA, contingent upon removal targets approved, known wild horse movement patterns in the area, and other factors.

Since gather efficiency, even with helicopter gathers rarely exceeds 85-90%, at least 10-15% of wild horses would be left uncaptured and consist of normal age structures and sex ratios. Additionally, these uncaptured mares would not be treated with population growth suppression (under the Fertility Control Alternatives). Future gather efficiency could be much lower, resulting in a larger percentage of the population evading capture. Bait and water trapping would likely not be on the scale to gather every single horse, or even a majority of the population and in most cases would be used to supplement removals and population growth suppression treatments in addition to darting activities and periodic

helicopter gathers if they become necessary to meet population objectives (as identified for specific Alternatives).

On-site adoption events could be planned to occur in conjunction with the gather activities in which selected wild horses would be adopted out to qualified applicants near the gather location following standard screening and approval procedures.

Should the AML be adjusted through future Rangeland Health Assessments, or other similar analysis, the future removal numbers would be adjusted accordingly. Herd health and rangeland monitoring data would be assessed to determine the number of horses that need to be removed in subsequent gathers. Growth rates, genetics data and other herd characteristics would be examined at to determine if all, or which mares should be treated.

All gather sites, holding facilities, and camping areas on public lands would be recorded with Global Positioning System (GPS) equipment and provided to the BMD Noxious Weed Specialist for monitoring following the gather.

Multiple gather sites (traps) would be used to gather wild horses both from within and outside the HMA boundaries within the Fish Creek HMA. The BLM would make every effort to place gather sites in previously disturbed areas, but if new sites need to be used, a cultural resource inventory would be completed prior to using the new gather site. All cultural materials located would be treated as unevaluated sites and avoided by project re-design. No gather sites would be set up near greater sage-grouse leks, known populations of Sensitive Species; or in riparian areas, cultural resource sites, Wilderness Study Areas (WSAs), or Wilderness.

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. Old, sick or lame horses unable to maintain an acceptable body condition (greater than or equal to a Henneke body condition score (BCS) of 3 or with serious physical defects such as club feet, severe limb deformities, severe loss or wear of teeth or sway back would be humanely euthanized as an act of mercy.

Public Observation

Public observation of the helicopter gather activities on public lands would be allowed in accordance with observation protocols intended to minimize potential for harm to members of the public, to government and contractor staff, and to the wild horses being gathered, and would be consistent with BLM IM No. 2010-164 and in compliance with Wild Horse Observation Protocol found in Appendix F. Public observation sites would be established in locations that reduce safety risks to the public (e.g., from helicopter-related debris or from the rare helicopter crash landing, or from the potential path of gathered wild horses), to the wild horses (e.g., by ensuring observers would not be in the line of vision of wild horses being moved to the gather site), and to contractors and BLM employees who must remain focused on the gather operations and the health and well-being of the wild horses.

The Wild Horse Observation Protocol (Appendix F) provides the public with the opportunity to safely observe the gather operations. Every attempt would be made to identify one or more observation sites at the gather location that offer meaningful viewing opportunities and reasonable access with the objective of observing individual animals captured, although there may be circumstances (flat terrain, limited

vegetative cover, private lands, etc.) that require viewing locations to be at greater distances from the gather site due to public visitor access limitations or to ensure safe gather operations.

The public has expressed interest in being involved with bait/water trap gathers with the understanding that humans cannot be present during trapping operations due to the nature of this type of a gather (if people are near, the horses would not enter the trap corrals). In order to keep the public informed and allow reasonable access to the gather operations, the MLFO would schedule site visits by appointment to view the bait/water trap corrals, and ask questions. Throughout the trapping activities, the BLM would attempt to provide opportunities for the public to be present when horses have been captured and view them in the trap and/or holding corrals.

The MLFO would make reasonable efforts to allow for public viewing of the captured horses within the limitations and fluid nature of bait/water trapping. Additionally, the BLM Project Inspector (PI) and/or Contracting Officer’s Representative (COR) would take digital photographs of the horses in the pens each day a capture occurs as well as when they are in the holding corrals and during loading to facilities and post them on Flickr® or other platform on a daily basis (within staff availability), and report the daily capture numbers, update on animal health or other notable information on a designated Fish Creek HMA Gather website.

2.4. Alternatives Comparison

The following tables provide a comparative overview of the Alternatives described above. Table 9 displays the proposed gather figures under Phase 1 of each of the Action Alternatives.

Table 8: Comparison of Alternatives Components

Alternative	Helicopter Drive Trapping	Bait and Water Trapping	Population Growth Suppression (Fertility Control)	Booster/ Darting	Sex Ratio Adjustment	Selective Removal	Non-Selective Removal (Gate Cut)
Proposed Action	√	√	√	√	No	√	No
Alternative 1	√	√	No	No	No	√	√
Alternative 2	No	√	√	√	No	No	No
Alternative 3	√	No	√	No	√	√	No
Alternative 4 -- No Action	No	No	No	No	No	No	No

Table 9: Comparison of Alternatives (Phase 1)

Alternative	Est. Gather Number	Est. Un-gathered	Est. treated mares	Est. to Remove	Est. Release	Est. Post-gather	Sex Ratio (studs:mares)
Proposed Action	500-549	0-49	150-175	200	300-349	300-349	50:50
Alternative 1	500-549	0-49	0	200	300-349	300-349	50:50
Alternative 2	500-549	0-49	251-275	0	500-549	500-549	50:50
Alternative 3	500-549	0-49	150-175	200	300-349	300-349	60:40
Alternative 4 -- No Action	0	0	0	0	0	0	unaffected

2.5. Alternatives Considered but Eliminated from Detailed Analysis

Through completion of EAs for proposed wild horse gathers in Nevada several alternatives have been proposed for consideration and are discussed below.

2.5.1. Remove or Reduce Livestock within the HMAs

This alternative would involve no removal of wild horses and instead address the excess wild horse numbers through the removal or reduction of livestock grazing within the Fish Creek HMA. This alternative was not brought forward for analysis because it would be inconsistent with the current LUP/RMPs and/or FMUDs for the grazing allotments within the Fish Creek HMA or with multiple use management. This gather document and subsequent Decision Record is not the appropriate mechanism for adjusting the authorized livestock use within the allotments associated with the Fish Creek HMA.

The proposal to reduce livestock would not meet the purpose and need for action identified in Section 1.2: *“to achieve and maintain the AML through removal of excess wild horses from within and outside of the HMA boundaries, and to reduce the population growth rate . . . prevent undue or unnecessary degradation of the public lands, and protect rangeland resources from deterioration associated with excess wild horses within the HMAs, and to restore a thriving natural ecological balance and multiple use relationship on the public lands consistent with the provisions of Section 1333 (a) of the WFRHBA of 1971.”*

This Alternative is not consistent with the WFRHBA, which directs the Secretary to manage wild horses in balance with other multiple uses and to immediately remove excess wild horses. Furthermore, simply re-allocating livestock AUMs to increase the wild horse AMLs would not achieve a thriving natural ecological balance. Unlike livestock which can be confined to specific pastures, limited periods of use, and specific seasons-of-use so as to minimize impacts to vegetation during the critical growing season or to riparian zones during the summer months, wild horses are present year-round and their impacts to rangeland resources cannot be controlled through establishment of a grazing system, such as for livestock. Thus, impacts from wild horses can only be addressed by limiting their numbers to a level that does not adversely impact rangeland resources and other multiple uses.

Livestock grazing can only be reduced or eliminated through provisions identified within regulations at 43 CFR § 4100 and must be consistent with multiple use allocations set forth in LUP/RMPs. Such changes to livestock grazing cannot be made through a wild horse gather decision, and are only possible if BLM first revises the LUPs to allocate livestock forage to wild horses and to eliminate or reduce livestock grazing.

The BLM is authorized to remove livestock from HMAs *“if necessary to provide habitat for wild horses or burros, to implement herd management actions, or to protect wild horses or burros from disease, harassment or injury”* (43 CFR § 4710.5), however, this authority is usually applied in cases of emergency and not for general management of wild horses or burros. As shown in Section 3.4, the actual use by livestock in the allotments affiliated with the Fish Creek HMA has been far below the permitted levels and averaged 62% of the permitted levels since 2009. In 2014, the actual use was 49% of the permitted levels in these allotments. Since 2012, voluntary non-use due to drought has been requested of livestock operators across the BMD due to reduced forage and vigor of rangeland forage species.

For the reasons stated above, this alternative was dropped from detailed analysis. For long-term management, changes in forage allocations between livestock and wild horses would have to be re-evaluated and implemented through the appropriate public decision-making processes to determine whether a thriving natural ecological balance can be achieved at a higher AML and in order to modify the current multiple use relationship established in the LUPs.

2.5.2. Alternative gather techniques instead of helicopter capture of excess wild horses

Within Nevada, scoping and issuance of Gather Plan EAs for wild horse gathers has resulted in comments from the public requesting that the BLM capture wild horses 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 could result in additional injury to animals, humans and 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 Fish Creek HMA, access limitations and approachability of the wild horses.
- Use of wranglers on horseback drive-trapping to remove excess wild horses can be fairly effective on a small scale but due to the number of excess horses to be removed, the large geographic size of the Fish Creek HMA, and approachability of the wild horses this technique would be ineffective and impractical. Horseback drive-trapping is also very labor intensive and can be very harmful to the domestic horses used to herd the wild horses and dangerous to humans. For these reasons, this method was eliminated from further consideration.

2.5.3. Letting Nature Take its Course/Control of Wild Horse Numbers by Natural Means

This alternative would use natural means, such as natural predation or extreme weather to control the wild horse population. This alternative was eliminated from further consideration because it is contrary to the WFRHBA which requires the BLM to protect the range from deterioration associated with an overpopulation of wild horses. This Alternative is also inconsistent with the RMP and ROD. The alternative of using natural controls to achieve a desirable AML has not been shown to be feasible in the past. Wild horse populations in the Fish Creek HMA are not substantially regulated by predators, as evidenced by the 18-20% average annual increase in the wild horse populations within the HMA.

Survival rates for wild horses on western public lands are high. None of the significant natural predators from native ranges of the wild horse in Europe and Asia — wolves, brown bears, and possibly one or more of the larger cat species — exist on the wild horse ranges in the western United States (mountain lions and black bears take foals in a few herds, but predation contributes to population limitation in only a handful of herds. In some cases, adult annual survival rates exceed 95%. Many horse herds grow at sustained high rates of 15-22% per year and are not a self-regulating species. The NAS report concluded that the primary way that equid populations self-limit is through increased competition for forage at higher densities, which results in smaller quantities of forage available per animal, poorer body condition and decreased natality and survival. It also concluded that the effect of this would be impacts to resource and herd health in contradiction to BLM management objectives. This alternative would result in a steady increase in the wild horse populations which would continue to exceed the carrying capacity of the range resulting in a catastrophic mortality of wild horses in the Fish Creek HMA, and

irreparable damage to rangeland resources.

While some members of the public have advocated “letting nature take its course”, allowing horses to die of dehydration and starvation would be inhumane treatment and would be contrary to the WFRHBA, which mandates removal of excess wild horses. The damage to rangeland resources that results from excess numbers of wild horses is also contrary to the WFRHBA, which mandates the Bureau to “*protect the range from the deterioration associated with overpopulation*”, “*remove excess animals from the range so as to achieve appropriate management levels*”, and “*to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area*”.

Title 43 CFR § 4700.0-6 (a) states “*Wild horses shall be managed as self- sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat*” (emphasis added).

As the vegetative and water resources are over utilized and degraded to the point of no recovery with wild horse overpopulation a contributing factor, wild horses would start showing signs of malnutrition and starvation. The weaker animals, generally the older animals, and the mares and foals, would be the first to be impacted. It is likely that a majority of these animals would die from starvation and dehydration which could lead to a catastrophic die off. The resultant population could be heavily skewed towards the stronger stallions which could lead to social disruption in the Fish Creek HMA. Competition between wildlife and wild horses for forage and water resources would be severe. Wild horses can be aggressive around water sources, and some wildlife may not be able to compete, which could lead to the death of individual animals. Wildlife habitat conditions would deteriorate as wild horse numbers above AML reduce herbaceous vegetative cover, damage springs and increase erosion. This degree of resource impact would likely lead to management of wild horses at a greatly reduced level if BLM is able to manage for wild horses at all on the Fish Creek HMA in the future. For these reasons, this alternative was eliminated from further consideration.

2.5.4. Make on-the-ground and individualized excess wild horse determination prior to removal

An alternative to make on-the-ground and individualized excess wild horse determinations prior to removal has been recommended through the public review process under the view set forth by some commenters that a tiered or phased removal of wild horses from the range is mandated by the WFRHBA. Specifically, this alternative would involve a tiered gather approach, whereby BLM would first identify and remove old, sick or lame animals in order to euthanize those animals on the range prior to gathering. Second, BLM would identify and remove horses for which adoption demand exists by qualified individuals, such as younger horses or horses with unusual and interesting markings. Last, BLM would remove any additional excess horses necessary to bring the horse/burro population back to AML.

This proposed alternative would only be viable in situations where the project area is contained within barriers (natural and/or manmade) which prohibits the animals movements outside the project area, the area is readily accessible and wild horses are clearly visible, and where the number of horses to be removed is so small that a targeted approach to removal could be implemented. Under the conditions present within the project area, however, this proposed alternative is impractical, if not impossible, as well as more disruptive to and less humane for a variety of reasons.

First, BLM does euthanize old, sick or lame animals on the range when such animals have been identified. This occurs on an on-going basis and is not limited to wild horse gathers. During a gather, if

old, sick or lame animals are found and it is clear that an animal's condition requires the animal to be put down, that animal is separated from the rest of the group that is being herded so that it can be euthanized on the range. However, horses that meet the criteria for humane destruction because they are old, sick or lame usually, in most cases, cannot be identified as such until they have been gathered and examined up close, so as to determine whether the horses have dental regression or damage, genetic defects (i.e. club foot), injuries (old/new), and overall wild horse body condition. Old, sick and lame horses meeting the criteria for humane euthanasia are also only a very small percentage of the total number of horses to be gathered, comprising on average about 0.5% of gathered horses. Thus, in a gather of over 1,000 horses, potentially about five of the gathered horses might meet the criteria for humane destruction. Due to the size of the Fish Creek HMA, access limitations associated with topographic and terrain features and the challenges of approaching horses close enough to make an individualized determination of whether a horse is old, sick or lame, it would be virtually impossible to conduct a phased culling of such horses on the range without actually gathering and examining the horses.

Similarly, rounding up and removing wild horses for which an adoption demand exists, before gathering any other excess wild horses would be both impractical and much more disruptive and traumatic for the animals. Making a determination of excess as to a specific horse under this alternative, and then successfully gathering that horse would be impractical to implement (if not impossible) due to the size of the Fish Creek HMA, terrain challenges and difficulties approaching the wild horses close enough to make an individualized determination.

The impracticalities inherent in attempting to separate the small number of adoptable horses from the rest of the herd, and the impacts to the horses from the closer contact necessary, makes such phased removal a much less desirable method for gathering excess wild horses. This approach would create a significantly higher level of disruption for the horses on the range and would also make it much more difficult to gather the remaining excess wild horses. A phased strategy such as described would be cost-prohibitive, and would be unlikely to result in the successful removal of excess horses. Furthermore, if BLM plans to apply any population controls to gathered horses prior to release, it would be necessary to gather more than just the excess horses to be removed. This alternative was therefore eliminated from any further consideration.

2.5.5. Raising the Appropriate Management Levels for Wild Horses

This alternative was not brought forward for detailed analysis because it would be outside of the scope of the analysis, and would be inconsistent with the WFRHBA which directs the Secretary to immediately remove excess wild horses and to manage wild horse populations within multiple use management. This gather document and subsequent Decision Record is not the appropriate mechanism for adjusting the AML for wild horses.

This alternative is inconsistent with the BMD RMP and multiple use management. Adjusting AML must be based on the analysis of monitoring data. Monitoring data collected within the Fish Creek HMA does not indicate that an increase in AML is warranted at this time. On the contrary, such monitoring data confirms the need to remove excess wild horses above AML to reverse downward trends and promote improvement of rangeland health and recovery from severe/extreme drought experienced in 2012-2014 and potentially beyond these years. Wild horse AML would be analyzed in future Rangeland Health Assessments which would include involvement with the interested public.

2.5.6. Designation of the HMAs to be Managed Principally for Wild Horses

This action to designate the Fish Creek HMA as a “Wild Horse and Burro Range” under 43 CFR § 4710.3-2 would require an amendment of the approved RMP which is outside the scope of this EA. Only the BLM Director or Assistant Director (as per BLM Manual 1203: Delegation of Authority), may establish a Wild Horse and Burro Range after a full assessment of the impact on other resources through the land-use planning process. As this is not an “exclusive” designation, it potentially would not change the level of livestock grazing permitted to occur in the area. Refer to footnote 7, page 10 for a list of currently managed Wild Horse or Burro Ranges.

3. Affected Environment and Environmental Consequences

To comply with NEPA, the BLM is required to address specific elements of the environment that are subject to requirements specified in statute or regulation or by executive order (BLM 1988, BLM 1997, BLM 2008). The following table outlines the elements that must be addressed in all environmental analyses, as well as other resources deemed appropriate for evaluation by the BLM, and denotes if the Proposed Action, sequential alternatives, or the No Action Alternative affects those elements.

Potential or expected impacts to the affected resources are discussed following the tables. Direct impacts are those that result from the actual gather, removal and treatment of wild horses from the Fish Creek HMA. Indirect impacts are those impacts that occur once the gather, removal and treatment of wild horses is complete.

Table 10a: Elements Checklist

ELEMENT	PRESENT YES/NO	AFFECTED YES/NO	RATIONALE
Air Quality	Yes	No	The proposed gather area is not within an area of non-attainment or areas where total suspended particulate matter exceeds Nevada air quality standards. Areas of disturbance would be small and any effects on air quality would be temporary and fleeting in nature, and would take the form of fugitive dust.
ACECs	No	No	Resource is not present.
Cultural Resources	Yes	No	Through adherence of the SOPs (Appendix A), potential impacts to cultural sites would be eliminated. Archeological inventory of gather corrals, holding corrals and others areas of potential effects would occur prior to construction. If cultural resources were encountered, those locations would not be utilized.
Environmental Justice	No	No	The Proposed Action or alternatives would have no effect on minority or low-income populations.
Fish Habitat	No	No	Resource is not present.
Flood Plains	No	No	Resource is not present.
Forests and Rangelands (HFRA only)	Yes	No	This project does not meet the criteria to qualify as an HFRA project.
Noxious Weeds and Invasive, Nonnative Species	Yes	Yes	Discussed below in Section 3.4.
Migratory Birds	Yes	Yes	Discussed below in Section 3.7 under Wildlife.
Native American Religious Concerns	No	No	There are no known Native American concerns.
Prime or Unique Farmlands	No	No	Resource is not present.
Threatened or Endangered Species (plants and animals)	No	No	No Threatened or Endangered Species are known to exist within the project area.
Wastes, Hazardous or Solids	No	No	Resource is not present.

ELEMENT	PRESENT YES/NO	AFFECTED YES/NO	RATIONALE
Water Quality	Yes	No	Resource would not be affected.
Wetlands and Riparian Zones	Yes	Yes	Discussed in detail below in Section 3.6.
Wild and Scenic Rivers	No	No	Resource is not present.
Wilderness	Yes	No	Wilderness Study Areas (WSAs) are not present within the HMA. But are present outside the HMA. No trapping will occur within them. Refer to the WSA discussion in Appendix A.
Lands with Wilderness Characteristics**	No	No	** Based on available inventories

Other resources of the human environment that have been considered for this EA are listed in the table below.

Table 10b Checklist of other Resources

OTHER RESOURCES	PRESENT YES/NO	AFFECTED YES/NO	RATIONALE
Grazing/Livestock Management	Yes	Yes	Discussed below in Section 3.3.
Land Use Authorization	Yes	No	Resource is not affected by the proposed action or alternatives
Minerals	Yes	No	Resource is not affected by the proposed action or alternatives.
Paleontological Resources	Yes	No	Resource is not affected by the proposed action or alternatives. There is a minimal likelihood that resources would be present. Known resources are present at Alhambra Hills but will not be affected. Any surface disturbance resulting from the proposed gather would not be sufficient to cause impacts.
Recreation	Yes	No	Resource is not affected by the proposed action or alternatives.
Socio-Economic Values	Yes	No	Resource is not affected by the proposed action or alternatives.
Soils	Yes	Yes	Discussed below in Section 3.5.
Special Status Species (plants and animals)	Yes	Yes	Discussed below in Section 3.7 under Wildlife.
Vegetation	Yes	Yes	Discussed below in Section 3.5.
Visual Resources	Yes	No	Resource is not affected by the proposed action or alternatives. Gather operations would be temporary and isolated in nature. There would be no permanent changes to the landscape.
Wild horses	Yes	Yes	Discussed below in Section 3.2.
Wildlife	Yes	Yes	Discussed below in Section 3.7.

3.1. General Description of the Affected Environment

The proposed gather area is located within Central Nevada within the Great Basin. Elevations range between 6,300 feet in the Valleys to over 10,000 at the top of Ninemile Peak. Much of the rangeland at lower elevations consists of salt desert shrub and either Wyoming big sagebrush or black sagebrush plant communities. Pinyon and Juniper are prevalent in the mid and upper elevations. Precipitation averages 5-8 inches per year in the valleys and 16+ inches in the highest elevations. Drought conditions may occur 1 out of every 3-4 years, and the majority of the area has been within Severe and Extreme Drought since 2012¹³. Refer to the documents referenced in Section 1.5 for more information about the Fish Creek HMA and Map 1-3 which displays various aspects of the HMA.

3.2. Wild Horses

Affected Environment

Additional detailed information about the history and the wild horses within the Fish Creek HMA is

13 Droughtmonitor.unl.edu/

provided in the EA completed for the most recent gather in 2005/2006, identified in Section 1.1. Refer also to expanded detail in Appendix B.

This HMA is located south and west of Eureka, Nevada, encompassing the east side of Antelope Valley, the Mahogany Hills, Fish Creek Range and a portion of the Antelope Range. As stated in Section 1.1, this EA is specific to activities that would be implemented within the portion of the Fish Creek HMA south of U.S. Highway 50. This portion of the HMA is 230,675 acres with an established AML range of 101-170 wild horses.



Antelope Valley, March 2014.

During the most recent helicopter inventory conducted in March 2014, a direct count of 463 adults and 15 newly born foals were observed for 478 total. Of the adults observed, it was estimated that 55 or 11.5% were yearlings born in 2013. This was only an estimate, as it is difficult to discern larger yearlings from smaller adults or two year olds with heavy winter coats from a helicopter. The estimate was made to collect additional information beyond adults and young foals, and to be able to assess the number of foals born in 2013 that survived through the past year of drought. The 15 new foals observed represents 3.1% of the total horses observed, but only a fraction of those that would have been expected to be born during the spring of 2014.

For the process of estimating the population growth from the total number of foals born in 2014, a figure of 19% population increase was utilized, resulting in an estimated population of 549¹⁴. During the 2014 inventory, the double simultaneous count method was utilized, but has yet to be analyzed and the population estimate is based on a direct count, without adjustments applied from the analysis (which would likely increase the estimate by at least 5-10%). An estimated 20-100 wild horses are located outside of the Fish Creek HMA boundaries in Antelope Valley at any given time. During the March 2014 inventory, 154 wild horses or 32% of the total observed were located outside of HMA boundaries. Refer to Map 2 which shows the distribution of wild horses observed during the March 2014 inventory.

As stated in the 2013 NAS report *Using Science to Improve the BLM Wild Horse and Burro Program: A Way Forward*, it was the committee's judgment that the reported annual population statistics are probably substantial underestimates of the actual number of horses occupying public lands inasmuch as most of the individual HMA population estimates are based on the assumption that all animals are detected and counted in population surveys—that is, perfect detection. A large body of scientific literature focused on inventory techniques for horses and many other large mammals clearly refutes that assumption and shows estimates of the proportion of animals missed on surveys ranging from 10 to 50 percent depending on terrain ruggedness and tree cover (Caughley, 1974a; Siniff et al., 1982; Pollock and Kendall, 1987; Garrott et al. 1991a; Walter and Hone, 2003; Lubow and Ransom, 2009). The committee went on to state that a reasonable approximation of the average proportion of horses undetected in surveys throughout western rangelands may be 20% to 30%. An earlier National Research Council committee and the GAO also concluded that reported statistics were underestimates.

¹⁴ Direct count 463 adults x 1.19 = 549 estimated 2014 population following foaling.

Severe and extreme drought conditions since 2012 have resulted in lack of water and drought affected vegetation within the HMA. Water sources are inherently limited, consisting mostly of ephemeral and perennial springs and some developed water sources. Severe and Extreme drought conditions endured since 2012 have caused water sources to dry up or dry up earlier in the year. This has resulted in reduced water availability for the increasing population of wild horses. Due to the inadequacy of water and concerns of emergency conditions additional measures have been implemented by the MLFO since 2012. Water has been hauled to two locations in the northern portion of the HMA, and the Davis Pipeline maintained and operated in order to provide adequate water and prevent emergency conditions. A well in the northern portion of the HMA has also been pumped to provide water through the summer months. Remote trail cameras have been used to document wild horse body condition and use of the waters at the well and the two water haul locations.



The Slough June 15, 2012. The trail camera was used to assess the water quantity and the use by wild horses.



By the end of June 2012, the Slough was almost dry, and horses were having difficulty using the water.



Water hauling was initiated at the Slough and at McCullough Spring in early July 2012.



The trail cameras were used to assess wild horse body condition. This black horse was underweight in 2012.



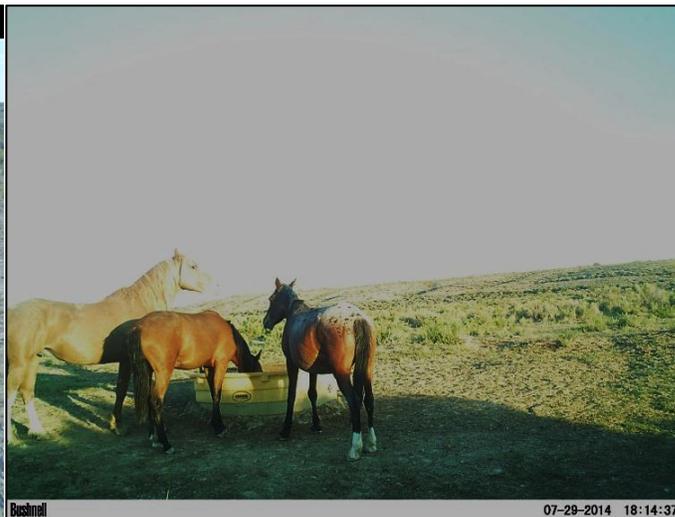
The Davis Pipeline has been maintained and operated since 2012 to improve water availability. Five troughs are on this pipeline that originates at Davis Spring. Photo taken June 29, 2014.



In early 2013, a large 3000 gallon storage tank was installed at the Slough and McCullough Springs to improve efficiency of hauling water and ensure better qualities for wild horses in order to avoid emergency situations. This one is at the Slough, July 2013.

Health

On average, the body condition of the Fish Creek HMA wild horses has been Moderately Thin to Moderate, Henneke BCS 4.0-5.0 during the summer months and Thin to Moderately Thin during winter months (BCS 3.0-4.0). The BCS of some horses have dropped below that, particularly in aged mares and young foals, especially in 2012 and 2013 which appeared to receive the worst of the drought impacts. Refer to Appendix A for an explanation of the Henneke BCS. The HMA has been closely monitored for escalating conditions due to drought since 2012. This HMA has a history of drought issues and emergency gathers due to lack of forage and water. In addition to field monitoring of forage, water and wild horse body condition, resource monitoring flights were conducted in August, 2012, March, 2013 and January, 2014 to assess water, forage and wild horse body conditions.



The trail cameras were useful to monitor body condition of the horses. On the left, a group of three horses observed in 2013 with a thin mare and small foal. On the right the same group of horses observed in 2014.

Widespread debilitation or death has not been documented throughout the HMA; however drought conditions and limited resources coupled with overpopulation have likely contributed to increased death rates within the population particularly older horses or young foals. It is expected that due to the extra efforts taken to increase water availability that distribution of the horses within the HMA has allowed better use of the limited forage, including higher elevations not covered with snow.

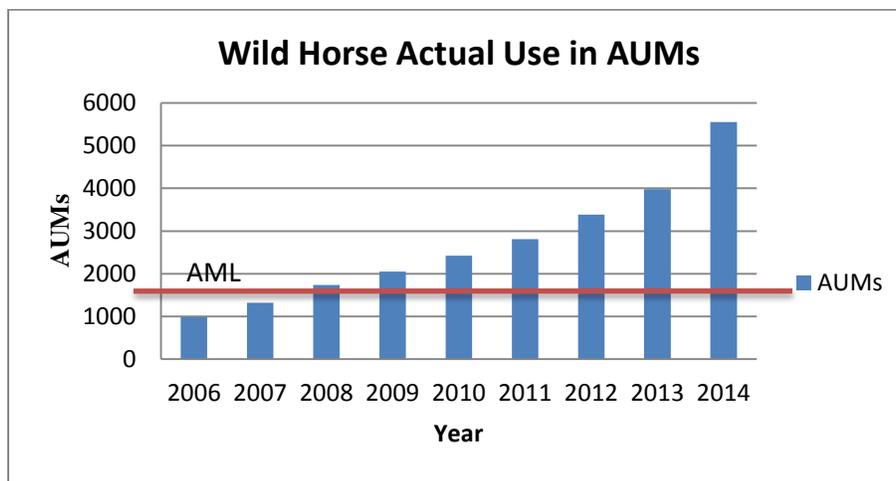
Actual Use

Wild horse actual use was compiled based on the three helicopter inventory flights completed since the 2006 gather (September 2007, August 2011 and March 2014), and estimated populations between inventory years. The actual use only includes estimated adult wild horses and does not include foals. An annual rate of increase of 18-20% was utilized to estimate the population figures. The actual use for wild horses in the Fish Creek HMA since the last gather operation is displayed in the table below.

Table 11: Actual Use (AUMs) Fish Creek HMA

Year	Actual Use (AUMs)	AML (AUMs)
2006	984	2040
2007	1320	2040
2008	1740	2040
2009	2052	2040
2010	2424	2040
2011	2808	2040
2012	3384	2040
2013	3984	2040
2014	5556	2040
Total	23,916	--
Average	2657	2040

The actual use table shows that the AML was exceeded in 2009 and has been exceeded in the years since. This means that wild horses have been using AUMs not allocated to their use through the 2004 Fish Creek Complex FMUD. The 2014 actual use represents 273% of the AUMs identified for the established AML, and use of 3,516 AUMs above what is allocated. The following figure also displays the actual use in relation to the established AML.



Wild Horse Actual Use

Characteristics

Typically, the wild horses found in the Fish Creek HMA are medium in size, reaching approximately 14-14.2 hands (56-58 inches at the withers) and weigh an average of 800-1000 pounds. The dominant color within the HMA is roan (blue, red, strawberry), with other colors present including palomino, buckskin, grulla, sorrel, gray, brown and bay. The origin of wild horses in the Fish Creek HMA most likely descended from stock used by ranchers in the area, and are speculated to have originated from Quarter Horse stock. Curly horses can be found in the HMA and it is thought that these horses may be descendants of curly horses brought into the United States to Eureka, Nevada in the late 1800's by Tom Dixon. The suspected origin of the Curly Horse in the Eureka area is documented in the book, *The Dames and the American Curly Horse* by Dale E. Wooley. Though limited in number, there are still curly horses present in the HMA today, and it is the goal of the MLFO to preserve the curly traits in this HMA. The following photos of the Fish Creek HMA wild horses were taken in 2014. From top to bottom: Antelope Valley December 2014, Davis Pipeline June 2014, Fenstermaker Spray June 2014.





The last gather completed in the Fish Creek HMA was in July 2005 and February 2006. Because wild horses released in 2005 and 2006 represent most age groups, and due to the long period of time since the last gather, it is anticipated that a normal age structure would be present for this HMA. Due to the past 3 years of Severe to Extreme drought conditions in the HMA, it is possible that higher than average death rates could have impacted the proportion of very young or very old horses in the population.

Estimated Age Structure

The age structure for the Fish Creek HMA is estimated to reflect a normal population, with all age groups represented. The estimated age structure was compiled based on analysis gather data from seven different years (1997-2009), involving 5 different HMAs administered by the BMD, including the Fish Creek HMA. All total, data for over 5,200 wild horses was compiled in order to determine an average age structure. This was then adjusted for the estimated population in the Fish Creek HMA. The following table displays the estimated age structure for the Fish Creek HMA (which was also utilized in the Population Modelling).

Table 12: Estimated Age Structure – Fish Creek HMA

Age	Number		Percent	
	Female	Male	Female	Male
0	45	40	15.5%	15.4%
1	25	22	8.6%	8.5%
2	36	32	12.4%	12.4%
3	39	34	13.4%	13.1%
4	27	24	9.3%	9.3%
5	19	17	6.6%	6.6%
6	12	11	4.1%	4.2%
7	12	11	4.1%	4.2%
8	10	9	3.4%	3.5%
9	10	9	3.4%	3.5%
10-14	29	26	10.0%	10.0%
15-20	15	14	5.2%	5.4%

Age	Number		Percent	
	Female	Male	Female	Male
20+	11	10	3.8%	3.9%
Total	290	259	100.0%	100.0%

Movement Patterns

Wild horse distribution within the Fish Creek HMA varies through the year as animals move through the allotments associated with the HMA in response to snow cover and water availability. Many of the wild horses move into the higher elevations of the Dry Lake Area of the Arambel Allotment, or Nine Mile Peak area of the Fish Creek HMA in the summer months, and move into the lower elevation winter fat communities in Antelope Valley in the winter. The March 2014 helicopter inventory map shows the distribution of the wild horses in the HMA. Distribution in summer would have reflected more horses in the higher elevations. It is likely that a certain portion of the wild horses within the Fish Creek HMA may move south into the Sevenmile HMA and east into Pancake Complex, though no definitive or re-occurring movement patterns have been documented. In general, additionally water hauling and operation of wells and pipelines has helped to improve the distribution of wild horses in recent years. Wild horses are concentrating in portions of the HMA, especially near waters and in the winter range areas of Antelope Valley, but not to the degree they would have been if the additional waters would not have been available.



McCullough Springs water haul location (storage tank out of view). The date function on the camera was not working properly. The photo was taken during summer 2013.



Brown Canyon Well troughs. This well has been pumped throughout the summer months since 2012 with a gas powered generator, and use of a large storage tank.

Wild Horse Gathers

The most recent gather of this area was the Fish Creek Complex gather completed in July 2005 and February 2006. The Fish Creek Complex gather included not only the Fish Creek HMA, but also the Sevenmile, Little Fish Lake and North Monitor HMAs, and their associated USFS WHTs. A one-year fertility control vaccine was administered to released mares during a gather in 1998; however population growth suppression treatments have not been administered since that time. Emergency removals occurred in 2000 and 2004 due to drought conditions and overpopulations of wild horses. Due to the recurring issues with lack of water and drought, no horses were returned to the northern portions of the HMA during the 2005/2006 gathers and only released to the Fish Creek Ranch Allotment at a level below the AML in order to alleviate pressure on the waters, and allow for recovery of the uplands and

the water sources. Refer to additional detail about past gathers in Appendix B and the 2004 Fish Creek Complex Gather EA.

These HMAs were last gathered in July 2005 with a follow up gather in February 2006. Fertility control was not administered during this gather. The details of both gathers are shown below.

Table 13: Fish Creek 2005/2006 Gather Results

HMA					
Fish Creek	July 16-20, 2005	200	161	34	195
Fish Creek	January 31-February 5, 2006	131	65	17	82 (due to the clearing of Lucky C)

The Fish Creek HMA gather was completed in two portions in summer 2005 and February 2006 because of conflicts in the National gather schedule that would have allowed for a winter gather to take place in late 2004. As a result, the gather was started during the summer of 2005 and finished the following winter. High elevations and thick tree cover in much of the gather area for the Fish Creek Complex precluded gather efficiencies above 60% in much of the Complex. During the Fish Creek Complex gather (which included several other HMAs and USFS Wild Horse Territories), a total of 331 wild horses were gathered from the Fish Creek HMA. During the gather of this HMA, only one horse was euthanized for a broken leg.

Genetics Analysis

During the 2005 gather, blood was drawn for genetics analysis. Only 23 samples were submitted for analysis. The genetics analysis report concluded that the genetic variation was high with indications of mixed ancestry. The highest similarity of the Fish Creek HMA was to Old World Spanish breeds, but no strong allelic indication of Spanish ancestry, with similar values to all cold blood horse groups. Due to the small sample size taken at the time, and the fact that hair samples are the standard method for analysis, a large sample size will be collected on the next gather for additional genetics analysis.



A gather crew member collects a hair sample for genetics analysis from a horse to be released back to the Diamond Complex Gather, February 2013.

Current Issues

Severe and Extreme drought conditions have been experienced in the Fish Creek HMA since 2012. As of 2012, the population within the HMA was estimated to be in excess of 160% of AML. The history of the Fish Creek HMA includes multiple emergency gathers of various scales due to lack of water, drought, and subsequent depletion of forage near available water sources. With drought conditions developing in 2012, MLFO staff began a monitoring program to document available water sources, animal health and forage availability in the Fish Creek HMA. Water hauling at two locations (the Slough and McCullough Spring) was initiated in July 2012 due to decline of wild horse body condition following depletion of two water sources. The Brown Canyon Well was pumped, and Davis Pipeline in the southern portion of the HMA repaired to provide water in the area.

Motion activated trail cameras were installed to monitor usage patterns and wild horse body condition through the summer. With the water provided, body conditions improved and stabilized. Monitoring of the forage and water continued through the summer months. A resource flight was conducted in August 2012 of the Fish Creek and other HMAs in order to assess body condition, water resources and wild horse distribution.

In April 2013, a monitoring flight was conducted to document distribution and animal health in the HMA. Two-3000 gallon storage tanks with troughs and floats were installed at the two water haul locations identified above in order to improve water availability and decrease costs. The Brown Well was pumped, and the Davis Pipeline operated. Trail cameras were again installed and monitoring of the water and forage continued. Body condition was noted to decline in the northern portion of the HMA despite the availability of the water storage unit and the well. Numerous mares dropped below a BCS of 3.0, and foals were small, and unthrifty. A local rancher pumped additional wells in the southern portion of the HMA outside of the HMA to provide water to the horses. Late summer rains provided some recharge to water sources and regrowth of vegetation further helping to avoid emergency conditions in this HMA.

Another resource flight was conducted in January 2014 to assess wild horse health and distribution within the HMA. Most wild horses were noted to be in a body condition class of 4.0 (moderately thin) or below, and considered “lean”. With little to no snow on the ground, horses were able to access forage that would have otherwise been unavailable to them. An inventory flight was conducted in March 2014 to obtain a current population estimate and assess conditions of the horses and the range. The average BCS was 4.0 (moderately thin). Large concentrations of horses were observed throughout portions of the HMA, and wild horses were observed to have moved outside of the HMA boundaries (refer to Map 2). Sources known to be limiting, had adequate water.

The MLFO continued to monitor wild horse distribution and body condition throughout 2014, and conduct drought monitoring to document vegetation conditions. Water hauling continued at two locations (Slough and McCullough) and the Brown Well was again pumped in 2014 to provide water to wild horses. The Davis Pipeline was maintained and operated to provide water to five troughs in the southern portion of the HMA.

Since 2012, the BLM has worked with the permittees in the Fish Creek HMA to obtain voluntary non-use by livestock in portions of the HMA, reduce hot season use and to permit use in the dormant season to protect habitat from overuse, and to protect forage and water resources for wild horses. Refer to Section 3.3 for more information.

Wild horses are a long-lived species with documented survival rates exceeding 95% for most 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 BMD, 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. Wildlife of Nevada is managed by the Nevada Department of Wildlife (NDOW). 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 that

plague 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 can deteriorate rapidly.

Environmental Consequences

Under the Proposed Action and Action Alternatives, impacts to wild horses would be both direct and indirect, occurring to both individual horses and the population as a whole. 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, Alternatives or the No Action Alternative.

Impacts Common to the Proposed Action, Alternative 1 and 3 (Use of Helicopter, with Removals)

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 and Section 3.9 for information about methods that are utilized to reduce injury or stress to wild horses and burros during gathers.

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

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



precede and follow the peak foaling period (mid-April to mid-May). 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, and the BLMs CAWP IM 2013-059 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.

Since gathers began in the 1970's, 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.

Over the past 40 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 wellbeing during and after the gather is a focus and priority.

Since 2004, BLM Nevada has gathered over 42,000 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. 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.

The Diamond Complex was gathered by the Battle Mountain, Ely and Elko Districts in January and February 2013. During the gather of 792 wild horses, only two horses were euthanized for pre-existing conditions, and no horses killed or euthanized due to the gather activities. This equates to 0.2% total for that gather. A previous gather completed of the Stone Cabin Complex in 2012 included the gather of 725 wild horses. A total of 5 gather reported death/euthanasia occurred, and 9 non-gather related/pre-existing cases for a total of 1.9% of the total gathered. The most recent gather completed in the Reveille HMA in November 2014 saw no euthanasia or deaths of the 120 gathered. 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.

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 horse.

Most injuries are sustained once the horse 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. See below for more information about bait/water trapping.

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 incidents are rare. Oftentimes, these horses 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.

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). Wild horses 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, BMD 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. Gathers conducted to implement fertility control are typically scheduled for fall and winter when heat or dehydration related issues would not be expected.

In some areas, gathering wild horses during the winter may avoid certain stresses that could be associated with a summer gather. By fall and winter, most 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 means the horses are closer to the potential trap sites and potentially herded shorter distances, thereby reducing 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 emergency gather of the Roberts Mountain Complex, deep snow and weak horses resulted in the need to plow some paths for the horses to allow for easier travel. When weak or debilitated horses are encountered, the pilot can bring horses to the gather corrals slowly and carefully, being mindful of their strength and body condition.

A winter gather may also result in less stress as the cold and snow may 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 covers 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 have the potential to 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 (whether in winter or summer) better than a domestic horse, regardless of breed due to the requirements of surviving in the wild. Most temperature related issues during a gather can be mitigated by adjusting daily gather times to avoid the extreme hot or cold periods of the day.

The environmental conditions and the overall health and wellbeing of the horses is continually monitored through both summer and winter gathers to adjust gather operations as necessary to protect the horses 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 BCS 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.

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.

Wild Horses Remaining or Released into the HMAs following Gathers

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, or Action Alternatives. Smaller, *isolated* populations (< 200 total population size) are particularly vulnerable when the number of animals participating in breeding drops below a minimum needed level (Coates-Markle, 2000). The wild horses in the Fish Creek HMA do not fall into this category because of the known and suspected intermixing between the nearby and adjacent Sevenmile HMA/Butler Basin WHT and Pancake HMA. Most wild horse herds sampled have high genetic heterozygosity, genetic resources are lost slowly over periods of many generations, and wild horses are long-lived with long generation intervals (Singer, 2000). Genetic analysis completed following the most recent gather of the Fish Creek HMA in 2004 reveals that the genetic variation and allelic diversity of the HMA is above average for wild horses sampled at that time. Refer to additional information about the genetic analysis in Appendix B.

The primary benefit of achieving and maintaining the established AML would be the improvement of the health and sustainability of rangeland habitat attributes over the long-term. By maintaining wild horse population size within the AML range, 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 and rangelands would have the opportunity to recover from prior overpopulation impacts and drought. 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 (drought) or harsh winters. Through maintenance of AML, progress would be made towards the Standards for Rangeland Health, Allotment Specific and RMP Objectives.

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.



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

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).

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

Excess wild horses removed from the range 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 sent 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 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.

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.

On Site Adoption Event

If public interest exists the MLFO may hold an on-site adoption event in conjunction with the initial and future gathers of the Fish Creek HMA. A small number of wild horses (est. 15-20) would be selected during helicopter or bait/water gather activities. BLM staff would freeze-mark, vaccinate, and deworm

the horses, and a veterinarian would draw blood to enable Coggins testing for Equine Infectious Anemia (EIA). All standard adoption requirements would apply.

Some additional handling to prepare the animals for the on-site event could result in injury, most commonly lacerations or bruising from contact with panels or fighting with pen mates. Experience conducting on-site adoptions in the BMD since 1995 indicates that wild horses removed from the range and soon adopted do not exhibit signs of additional stress as a result of not having additional time to “settle”. The adopted animals are able to move directly into a supportive, caring home environment and begin the gentling process and additional transportation to BLM short term facilities and handling and sorting is avoided.

Adoption or Sale with Limitations, and Long Term Pastures (LTPs)

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.

Wild horses generally 5 years of age and older (those for which there is less adoption or sale demand) are transported to LTPs. Each LTP is subject to a separate environmental analysis and decision making process. Wild horses in LTPs 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 LTPs in the Midwest for over 20 years.

Potential impacts to wild horses from transport to adoption, sale or LTP are similar to those previously described. One difference is that when shipping wild horses and for adoption, sale or LTP, 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.

LTPs 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 31,600 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, Nebraska and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTP 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. 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 LTP. 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 LTPs 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 BCS of 3 or greater due to age or other factors. Natural mortality of wild horses in LTP 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 LTP 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 2015 appropriated funds or those in future years.

Impacts Common to the Proposed Action, and Alternative 2 (Bait/Water Trap, Booster Via Darting)

Water/Bait Trapping

Gathering wild horses through bait and water trapping involves setting up portable panels around an existing water source, in an active wild horse area, or around an artificial water or bait source. The portable panels would be set up to allow wild horses to go freely in and out of the corral until they have adjusted to it. When the wild horses fully adapt to the corral, it is fitted with a gate system that will either close automatically or manually once wild horses are inside the corrals. The acclimatization of the horses creates a low stress trap. During this acclimation period the horses would experience some stress due to the panels being setup and perceived access restriction to the water/bait source.

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

Bait and/or water trapping generally require a long window of time for success. Although the trap corrals would be set in a high probability area for capturing wild horses residing within the area and at the most effective time periods, time is required for the horses to acclimate to the trap and/or decide to access the water/bait. Some of the main reasons that the potential for bait and water trapping was identified for the Fish Creek HMA is that there is good access to several water sources and that water sources are somewhat limited throughout the HMA, wild horse use patterns are strongly tied to those waters, and that the general area has good access and options for constructing bait or water trap corrals.

Gathering of the excess horses utilizing bait/water trapping could occur at any time of the year. Generally, bait/water trapping is most effective when a specific resource is limited, such as water during the summer months. For example, in some areas, a group of wild horses may congregate at a given watering site during the summer because few perennial water resources are available nearby. Under those circumstances, water trapping could be a useful means of capturing wild horses at a given location. As the proposed bait and/or water trapping in this area is a low stress approach to gathering of wild horses, such trapping can continue into the foaling season without harming the mares or foals. Conversely, it has been documented that at times water trapping could be stressful to wild horses due to their reluctance related to approaching new, human structures or intrusions. In these situations, wild horses may avoid watering or may travel greater distances in search of other watering sources.

Impacts that could occur through a bait or water trapping process would be similar to those experienced during helicopter gathers as most injuries occur once the animals are actually captured and in the trap corrals or holding corrals or during transport. Similar injury and death rates would be expected. Because of the nature of bait/water trapping corral design and the difficulty of sorting animals in bait/water traps, foals transported to short term facilities with adult wild horses of mixed gender may be more prone to injury. If mares and studs are not sorted before transport to short term facilities, increased fighting and injury could be expected.

The application of the fertility control booster or treatment with PZP-22 may be done with the use of the working chute and alleyways made out of panels. As a result, sorting and handling of horses would still be necessary, which can result in injury and rarely death, and would cause temporary stress to the horses during that time.

Since the goal would be to treat and release the individual groups that were captured together, few (Proposed Action) or no (Alternative 2) horses could be selected for removal. During the release event, depending upon foal age and mare experience, foals could be left behind or abandoned in the excitement of the release. Every precaution would be taken to keep activities calm and quiet to allow for a smooth transition from capture, treatment and then release during bait and water trapping.

PZP Booster Treatment via Darting

Booster treatments via darting would be administered by certified BLM staff, volunteers or other qualified organizations strictly following the developed darting and documentation protocol. Boostering would be implemented prior to the 22-month effective period is reached for PZP-22. Darting itself would be accomplished by targeting mares that are approachable on the range (rare), and by using camouflaged blinds at water locations and heavily travelled trails.

Booster treatment through darting would be with the one-year PZP formulation ZonaStat-H or current formulation. Should a multi-year formulation become available for use with darting, it may be implemented during future treatments. The effects of booster treatment with PZP via darting should have minor and temporary effects to treated wild horses and would consist of the discomfort to the injection site, and a raised awareness of humans.

Bait and water trapping could be used to capture horses at water sources or bait stations and either dart the mares in the capture corral prior to release, or the horses could be transported to a central holding corral where the PZP (ZonaStat-H or PZP-22) could be hand applied. This would also be the case for mares born on the range, or previously uncaptured that do not yet have the unique identifier or fertility control freezemark. These mares would also be sampled for genetics analysis and other data collected such as the mare's age, body condition, lactation status and photographs.

Impacts Common to the Proposed Action, Alternative 2 and 3 (Implementation of Fertility Control)

Three of the five Alternatives propose treating mares with PZP fertility control. The goal of fertility control is to break the cycle of gathers, removals and wild horses in holding facilities by reducing the number of horses that must inherently be removed from the range through the use of population controls at effective frequencies.

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 (or current formulation). Refer also to Section 2.3.1. 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 the 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 (PZP-22) based on winter applications follows:

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

Rates for summer application for an August to October treatment window are:

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>
Normal	80%	65%	50%

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.

The Food and Drug Administration (FDA), the HSUS, and animal care committees all carefully review protocols for PZP use, and more than 20 years of data, carried out under these set of rules, clearly show that wild horses are neither injured by this drug, nor do aberrational behaviors occur as a consequence of its application. Additionally, oversight by The HSUS assures that the vaccine is used only to slow reproduction and may not be used for the extermination of entire herds. PZP is designed to bring about short-term infertility and is reversible, if not used beyond five consecutive years. It reduces the need for gathers and preserves the original gene pool in each herd (Kirkpatrick et al. 2010).

As the sole approach, contraception would not allow the BLM to achieve the population objectives; however, in conjunction with other techniques (e.g., removals of excess animals and adoption) and through incorporation of other population control techniques, it now provides a valuable tool in a larger, adaptive management approach to wild horse and burro management.

Contraception may be a cost effective and humane treatment to employ in horses to prevent increases in populations, or with other techniques, to reduce horse populations (Bartholow 2004). In general, contraception would not remove horses from an HMA's population which would result in some continuing environmental effects by those individuals. Horses are long-lived reaching 20 years of age in the wild and those horses returned to the range may continue exerting throughout their life span negative effects on the environment as described above, as opposed to the removal of a horse. Contraception, if effective, reduces future reproduction. Limiting future population increases of horses would limit increases in environmental damage from higher densities of horses. It may also reduce the effect of wild horse gather activities on the environment (if it limits the numbers of wild horse gathers required). If application of contraception to horses requires capturing and handling horses, the risks and costs associated with capture and handling of horses may be roughly equivalent (not counting the cost of adoption). Application of contraception to older animals and returning them to the range may reduce risks associated with wild horses that are difficult to adopt or handle in captivity.



Diamond HMA helicopter overflight, August 2012. Mares treated with fertility control in 2004, with the identifying freeze-mark on the left hip.

Application of contraception to older animals and returning them to the range may reduce risks associated with wild horses that are difficult to adopt or handle in captivity.

PZP use in wild horse herds has been studied extensively for more than two decades, with papers published in peer-reviewed scientific journals by experienced reproductive physiologists, equine scientists, wildlife biologists, geneticists, and animal behaviorists, providing a portrayal of safety, high efficacy, and absence of long-term behavioral, physical, or physiological effects from the vaccine. This data is of scientific merit, supported by field data, with statistically adequate sample sizes. Data was collected by trained, unbiased individuals, who adhere to established research methodology within his or her respective field (Kirkpatrick et al. 2010).

Ransom et al. (2010) found no differences in how PZP-treated and control mares allocated their time between feeding, resting, travel, maintenance, and social behaviors in three populations of wild horses,

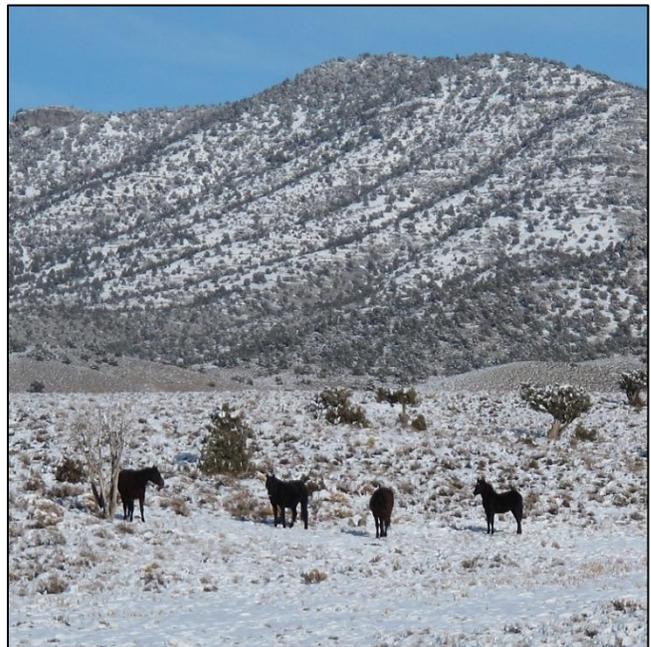
which is consistent with Powell's (1999) findings in another population. Likewise, body condition of PZP-treated and control mares did not differ between treatment groups in Ransom et al.'s (2010) study. Turner and Kirkpatrick (2002) found that PZP-treated mares had higher body condition than control mares in another population, presumably because energy expenditure was reduced by the absence of pregnancy and lactation.

In two studies involving a total of four wild horse populations, both Nunez et al. (2009) and Ransom et al. (2010) found that PZP-treated mares were involved in reproductive interactions with stallions more often than control mares, which is not surprising given the evidence that PZP-treated females of other mammal species can regularly demonstrate estrus behavior while contracepted (Shumake and Wilhelm 1995, Heilmann et al. 1998, Curtis et al. 2002).

Ransom et al. (2010) found that control mares were herded by stallions more frequently than PZP-treated mares, and Nunez et al. (2009) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Madosky et al. (in press) found this infidelity was also evident during the breeding season in the same population that Nunez et al. (2009) studied, resulting in PZP-treated mares changing bands more frequently than control mares. Long-term implications of these changes in social behavior are currently unknown. Kirkpatrick et al. (2010) conclude by stating that *"the larger question is, even if subtle alterations in behavior may occur, this is still far better than the alternative"* and that the *"other victory for horses is that every mare prevented from being removed, by virtue of contraception, is a mare that will only be delaying her reproduction rather than being eliminated permanently from the range. This preserves herd genetics, while gathers and adoption do not."*

Bartholow (2007) concluded that the application of 2 or 3-year contraceptives to wild mares could reduce operational costs by 12-20% or up to 30% in carefully planned population management programs and contraceptive treatment would likely reduce the number of horses that must be removed in total, with attendant cost reductions in the number of adoptions and total holding costs.

Furthermore, the HSUS (HSUS, 2010) has also completed analysis of the potential of population control with the modeling work showing that *"more aggressive changes in earlier years will yield more dramatic decreases in later years, obviating the need for removing any horses from the range in the future while still achieving AML"*. The HSUS concludes that the current management program is unsustainable and that *"by replacing the current gather-and-remove programs with gather-treat-and-release programs, the BLM would save approximately \$204 million dollars over 12 years while achieving and maintaining Appropriate Management Levels (AML) on wild horse Herd Management Areas (HMA) on public lands in the U.S."* The HSUS strongly supports the increased use of fertility control and other population controls, advocating the expansion of these programs as alternatives to gathers and Long



Fish Creek HMA wild horse herd, December 2013.

Term Holding. A Capture, Treat and Release strategy that could be possible with repeated treatment of fertility control is a “win-win” for everyone and is a significant turning point for BLM (H. Hazard, Pers. Comm 2010).

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). Available data from 20 years of application to wild horses contradicts the claim that PZP application in wild mares causes mares to foal out of season or late in the year (Kirkpatrick and Turner 2003). The PZP vaccine is currently being used on over 75 horse management areas for the National Park Service or the Bureau of Land Management and its use is appropriate for all free-ranging wild horse herds. The long-term goal is to reduce or eliminate the need for gathers and removals (Kirkpatrick et al. 2010).

Following the gather, a large percentage of mares inoculated with PZP-22 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.

Under the Proposed Action, Alternative 2 and 3, the BLM could continue to either booster and re-treat with PZP on an annual basis, or return to the HMA every 2-3 years to re-apply PZP-22 in order to maintain its effectiveness in controlling population growth rates. PZP-22 can safely be repeated in 2 years or as necessary to control the population growth rate. The probability of long-term infertility using PZP-22 is very low, and many mares retreated even after 3 years will return to normal fertility after the second treatment wears off (Turner, pers. comm.). Even through repeated booster treatments of PZP, most if not all mares would return to fertility. Observations at Assateague Island National Seashore indicate that the more times a mare is consecutively treated, that there is an increased time before fertility returns, but that even mares treated 7 consecutive years have started ovulating again (Kirkpatrick, 2002). Since the PZP formulations do not act permanently, determinations would be made as to how long to consecutively treat mares once the population growth is controlled.

One of the primary long-term and indirect effects to the wild horses through the continued treatment with fertility control would be to the overall health and wellbeing of the animals and the range. 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. Future foals born to these mares would be healthier overall, and would benefit from optimum nutrition from mares' milk and rangeland forage. 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. Research is continuing to document and quantify these effects.

The indirect effect of fertility control would be to reduce foaling rates and population growth, reduce the number of wild horses that would have to be removed in the future to achieve and maintain the established AML. Long term genetic and physical health and future reproductive success of mares within the herd would be sustained. Expanding the use of PGS to slow growth rates and reduce the number of animals removed from the range (especially to LTPs) is a BLM priority. Additionally,

reducing the numbers of wild horses that would have to be removed in future gathers would also allow for only younger, adoptable wild horses to be removed, and thereby eliminate the possibility of additional horses going to LTPs.

Reduced population growth rates and smaller population sizes would also allow for continued and increased improvements to range condition, which would have long-term benefits to wild horse habitat quality. As the population nears or is maintained at the level necessary to achieve a thriving natural ecological balance, vegetation resources would continue to improve, thereby improving the forage available to wild horses throughout the Fish Creek HMA. With balance and optimum distribution across the Fish Creek HMA 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 wild horses 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 distance back and forth to water and desirable foraging areas.

Should the booster treatment and repeated fertility control treatment with PZP-22 or other formulation be continued into the future, the chronic cycle of over population and large gathers and removals would no longer occur, but instead a consistent cycle of balance and stability would ensue, resulting in continued improvement of overall habitat conditions and animal health.

The Callaghan Complex administered by the MLFO has been treated with PZP-22 during two gather operations between 2007 and 2011. The Callaghan Complex includes four HMAs exceeding 800,000 acres. Inventory flights conducted before the PZP-22 became effective and then throughout the years since first treatment show notable decreases in the number of foals observed in the population. Though results varied by HMA, the most notable results showed a pre-effectiveness foal percentage of 20% in 2008, which had dropped to 7.5% by August 2012 after the second treatment was delivered in January 2011. Additionally, fewer horses needed to be removed during the second round of gathers, allowing for limited removals of younger, adoptable horses to be removed. During the first round of gathers, approximately 80% of the population was removed in order to achieve the AMLs in these areas. During the second round of gathers and retreatment of mares, primarily younger horses 4 years of age or younger were removed and 80% of the population remained on the range following the gather.

Differences within Alternatives 1 and 3

Gate Cut Gather

A non-selective, or Gate Cut Gather method could be implemented through any or all of the future gathers that would occur under Alternative 1, as no PGS would be planned, and therefore, the entire population would not need to be gathered unless specific ages of horses were targeted for removal. Wild horses would be gathered and removed as encountered until removal and post-gather population objectives were achieved. No wild horses would be released so that the number removed would equal the number gathered. Impacts from this alternative to the animals gathered and removed would be similar as the Proposed Action.

Un-gathered horses could experience minor disturbance due to the activity of the helicopter but would otherwise be unaffected, and would resume normal activity once removal operations were complete. Sex ratios and age distributions of the un-gathered population would be unknown but should be comparable to the ratios observed in the gathered animals and the impacts to the residual herd's health

and distribution is difficult to assume.

A primary effect of Gate Cut gathers would be the inability to select younger, more adoptable wild horses for removal would likely result in substantially more wild horses placed into LTPs at very high costs when compared to opportunities available under the other Action Alternatives.

Another effect of the Gate Cut Alternative is that it eliminates the ability to select for animal health or desirable or historical characteristics in animals released back to the range. Experience over the past 37 years has shown that oftentimes gate cut gathers result in unintended impacts to the remaining herds. For example, typically horses of larger size (draft), gentle disposition, or bright/light coloring are the easiest to locate and capture, and thus the first to be removed under a gate cut scenario. In effect, the gate cut gather removes these genetic traits from the herds, and oftentimes these traits are gone from the population forever. Additionally, removal through gate cut gathers may distort the distribution within the HMA by removing all animals concentrated in certain areas (where capture is easiest), while leaving animals in the outlying areas that are more difficult to gather (trees, terrain, distance), and which may be characterized by lesser quality habitat.

The inability to select for desirable or historic traits equates to a missed opportunity to maintain or improve the health, conformation, color patterns or demeanor of the wild horses within a population, and potential permanent loss of these genetic traits from the population.

Sex Ratio Adjustment

Population control methods including the adjustment of sex ratios to favor stallions would be expected to have relatively minor impacts to overall population dynamics. Under Alternative 3, impacts of additional stallions in the population could include decreased band size, increased competition for mares, and increased size and number of bachelor bands. These effects would be slight, as the proposed sex ratio is not an extreme departure from normal sex ratio ranges. Refer to Appendix B for information about the estimated sex ratio. Conversely, a selection criterion, which leaves more mares than stallions, would be expected to result in fewer and smaller bachelor bands, increased reproduction on a proportional basis with the herd, and larger band sizes. With more stallions involved in breeding it should result in increased genetic exchange and improvement of genetic health within the herd. After future gathers are conducted to achieve the low AML, sex ratio adjustment would no longer be implemented, and fertility control would be implemented to slow population growth rates.

Modification of sex ratios for a post-gather population favoring stallions could also reduce growth rates and subsequent population size, as a smaller proportion of the population would consist of mares that are capable of giving birth to foals.

Differences Between Fertility Control Alternatives (Proposed Action, Alternative 2 and 3)

Under the Proposed Action, the initial phase of the management would involve the capture of about 500-549 wild horses, removal of 200 excess wild horses, and release of 300-349 back to the range. Approximately 150-175 mares released to the range would be treated with PZP-22 or other approved formulation. Future treatments could involve boosting with ZonaStat-H or other formulations approved for use by BLM on wild horses.

The removal goal for the initial phase of the operation is for wild horses three years of age or younger, though select two or three year olds exhibiting desirable and historic traits could be released back to the range as well (such as those exhibiting curly characteristics). These horses 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 sent to LTPs. Only older animals would be offered for sale or transported to LTPs and it is estimated that this number would be very minimal due to the target of removing only younger, and highly adoptable wild horses.

The Proposed Action utilizes a combination of tools to implement a long-term population management plan designed to reduce population growth. BLM would booster treat with the ZonaStat-H formulation of PZP, implemented through darting and/or bait and water trapping, and helicopter drive trapping utilized at appropriate points in the future to either booster, re-treat with PZP-22 and treat previously untreated mares. Bait and water trapping could also be used to re-treat with the PZP-22 formulation. Following the initial gather, the goal would be to implement a PZP booster program of at least 90% of the mares per year. It is possible that wild mares in the Fish Creek HMA could be treated, boosted and re-treated through darting and bait and water trapping alone. It is possible that periodic helicopter gathers would be necessary to capture and treat mares, or that portions of the HMA would need to be gathered by helicopter to continue the treatment protocols.



Laura Leigh of Wild Horse Education in Antelope Valley inspecting conditions of wild horses and the range during a field tour with BLM. December 2014.

Alternative 2 does not include the use of helicopter or removals of wild horses and would involve initial treatment (or re-treatment) with PZP-22 and booster treatment with ZonaStat-H and re-treatment with PZP-22 or other current formulations through darting and bait and water trapping. The same data collection and implementation strategy would be used as described for the Proposed Action.

For the Alternatives that include a program to booster with ZonaStat-H (Proposed Action and Alternative 2), the following efficacy could be achieved if all treated mares can be boosted annually and any untreated mares from previous attempts can be treated.

<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%	94%	94%	94%	94%

Alternative 3 is similar to what has been referred to as Capture, Treat and Release (CTR) protocol, where the BLM return to this area re-apply fertility control (PZP-22). No boosting via darting or bait and water trapping would be done, and standard, periodic helicopter gathers would be completed to capture wild horses. Standard monitoring and inventory would be completed to monitor population size and growth rates. Under this alternative, 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%

Refer to the WinEquus Population Modelling Section below for more information about the expected effects to population size, removals and growth rates under the Alternatives.

The following table provides an overview of the proposed activities under each of the Alternatives in which PGS is planned.

Table 14: Comparison of Fertility Control Alternatives

Alternative	Description	Darting	Bait/Water Trap	Continued Treatment
Proposed Action	Helicopter gather 2015, Initial treatment with PZP-22.	Booster with ZonaStat-H.	Booster with ZonaStat-H, retreat and initially treat with PZP-22, sample genetics, freezemark mares.	Future helicopter gather TBD to retreat and initially treat with PZP-22, sample genetics, freezemark mares, limited removal of younger animals.
Alternative 2	Bait and water trapping to treat initially with PZP-22 or ZonaStat-H.	Booster with ZonaStat-H.	Same as the Proposed Action.	Dart and Bait/Water Trap.
Alternative 3	Same as the Proposed Action.	No Booster Treatment	Small scale trapping if needed for wild horse concentration or health issues.	Helicopter gather in 2-3 years to treat and retreat mares with PZP-22.

Monitoring and Animal Identification

Mares treated with fertility control and released during the gathers would be 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.

For the Alternatives that would involve booster treatment, a unique 1-3 number identifier would also be freezemarked on the left hip to allow for future documentation, tracking and follow up booster treatment. To facilitate an effective and efficient booster treatment program, monitoring of the released wild horses would occur though on the ground field monitoring and trail cameras to track movement and behavior patterns, collect data on animal health and foaling, and improve the future booster strategies.

Genetics samples would continue to be collected during bait/water and helicopter trapping. Inventory flights would also be conducted to monitor population size and the effectiveness of the fertility control program. Future analysis of population growth or decline, genetics and other factors would be completed to assess the future number of mares to be targeted for initial treatment with PZP-22, booster treatment or no treatment at all.

Results of WinEquus Population Modeling

The purpose of the modeling is to display a **potential range of outcomes for various management activities** including removals, fertility control or no removals. A standard set of outputs in the form of tables and graphs are obtained for population size, growth rates, and gathers/removals. The results can also be analyzed through Pivot tables in Excel to display other results of interest.

Modeling for the Fish Creek HMA was completed for all four Action Alternatives and the No Action Alternative using Version 3.2 of the WinEquus population model (Jenkins, 2000) for a total of 10 years,

which provided 11 years of data. The following section provides an overview of the results of the modeling and provides comparative tables. More detailed results are located in Appendix E.

The model was used to simulate the possible outcomes of PZP treatment, booster treatment or re-treatment to display the potential growth rates, population sizes and gather and removal numbers. It should be noted that the WinEquus population model is a management tool to project possible outcomes based on various management scenarios. The actual results of management activities may be similar or quite different than the output provided by the model due to individual herd genetics, foaling rates, age structure, health, survivability rates, environmental conditions and a host of other factors. Routine monitoring of the range and the herd would continue and will be used to evaluate population growth rates, animal health and other population and habitat parameters for use in future planning documents such as Herd Management Area Plans and wild horse gather EAs.

The current WinEquus Population Model includes options for management by Fertility Control Only, Removals Only or Removals and Fertility Control. Currently, there are no options to simulate fertility control booster treatment through darting for or initial treatment or boosting via bait and water trapping. The program is also limited in that a specific number of horses cannot be identified for removal under various gather scenarios. For example, the program will not allow the user to show an initial gather event and removal of 200 horses with initial treatment of PZP-22, then a follow up booster treatment of ZonaStat-H via darting, or capture by bait and water trapping with no future removals.

In order to overcome this obstacle for modelling of the Proposed Action, the estimated “post-gather” population after the initial phase of the gather in 2015 was modelled out through the 10 years simulating annual gathering of 90% of the mares through a Fertility Control Only scenario. Therefore, the results for “gathered” wild horses under the Proposed Action reflect a gather of 90% of the population annually rather than booster treatment of just mares or horses captured through bait and water trapping.

Additionally, under the Proposed Action, the objective is to follow up with booster treatment of mares to the extent possible using bait and water trapping and darting, with the understanding that periodic helicopter gathers could be necessary to effectively identify mares born on the range following the initial gather, collect genetics samples, apply freemarks and implement limited removals of young animals to make progress towards achieving or maintaining the established AML. It is possible that these activities could be achieved through bait and water trapping. However it is also realistic that bait and water trapping may not be effective enough to meet the needs for the long term management plan. For the purposes of this analysis, it was assumed that under the Proposed Action, that a second helicopter gather may be necessary at approximately 5 years or 2020, at which time any mares born since 2015 would be vaccinated with PZP-22 or other current formulation and properly identified for future booster treatment and monitoring. At that time as well, the assumption was made that at least weanlings and yearlings would be removed, if not additional horses in order to achieve the established AML.

Alternative 1 was modelled for Removal Only, at a 3-year interval, and only younger horses ≤ 4 removed during the gathers. The starting population of 549 was utilized, with a gather efficiency of 90%.

Alternative 2 was modelled for Fertility Control Only. Since this Alternative does not include helicopter gathers or removals, the model was set to show “gathers” annually to implement fertility control as was done for the Proposed Action. Since the goal under Alternative 2 would be to use a combination of bait and water trapping and darting to initially treat and then booster the mares, the “gather” number shown in the tables below is not representative, but actually reflects 90% of the population gathered each year.

The starting population of 549 was utilized, also with an annual “gather” efficiency of 90% which is highly ambitious for a program not using helicopter. 90% was chosen to show the maximum number of horses that could be captured and the potential population level effects.

Alternative 3 was modelled for both Removal and Fertility Control with a gather occurring in 2015, then every three years to implement PZP-22 or other current formulation. Younger age groups (≤ 4) were selected for removal, with adjustment of the removal targets to allow for additional males to be released to the population. Slight adjustment was made to the removal proportions to favor a higher ratio of studs remaining on the range. Again, the beginning population of 549 was utilized with a gather efficiency of 90%.

The results of the population modeling clearly show that the application of fertility control would reduce growth rates and result in potential reductions in the number of excess wild horses that would need to be removed from the range over the next 10 years to move towards achievement of the established AML range. The Fertility Control Alternatives (Proposed Action, Alternative 2 and 3) show a population that decreases over the modelling period once the fertility control became effective. 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 or any of the Action Alternatives would result in a crash of the population. Results obtained for 11 years and 100 trials reveal 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 most effective and efficient method to achieve the established AML would be through a combination of removals with an intensive fertility control program. Average population sizes produced from the modeling are in the following order from low to high by Alternative: Alternative 3 < Alternative 1 < Proposed Action < Alternative 2 < No Action.

The Proposed Action includes an initial removal of 200 horses in 2015, with annual booster treatments of PZP. Though the population modeling shows a decline in population size, the reduction is slow, and does not indicate that AML could be achieved by PZP treatment and booster treatment alone. Removals through bait and water trapping or helicopter gathers could be implemented throughout the next 10 years to achieve the objective of achieving AML more quickly than with no removals at all. It was not possible to model this scenario to show a gather and removal of a certain number of horses in a certain year, so the modelling for the Proposed Action does not show any future gathers occurring (see tables below for more information).

Alternative 1 does not include the use of fertility control to limit population growth, and the population size would be regulated through gathers and removals. The model was set to show only removal of horses 4 years of age or younger in order to transport only the most adoptable horses to BLM facilities for adoption. Through the modelling, the population size does approach the high level of AML by 2025, but requires the removal of over 900 horses through four gather events to achieve this.

With no removals of excess wild horses or use of helicopter to gather wild horses, the Alternative 2 shows the highest overall population size of all of the Action Alternatives. The initial treatment in 2015 for fertility control involves no removal of wild horses, so the starting population is 200 horses higher than the other Action Alternatives. The application of fertility control alone does cause a decline in the population, but not enough to achieve the AML within 10 years. The ending population in 2025 according to the model would be 100 wild horses higher than the Proposed Action.

The modelling for Alternative 3 shows the potential effects of a fertility control program which includes regularly scheduled gathers every 3 years to re-treat mares with fertility control and implement limited removals. Over the 10 year modelling period, the population approaches the high AML, and the results show that it is very possible that this Alternative could be successful in achieving AML by 2025. Through this scenario, the most typical trial shows 542 horses (≤ 4 years of age) removed from the range through 2025, including 279 within the initial gather event. It is not possible to set the model to remove a certain number of horses per gather, and the model generated the removal number for the most typical trial rather than the 200 identified as the current 2015 proposal. Future gathers in 2018, 2021 and 2024 reflected by the most typical trial showed the removal of 50-148 horses per gather event. This Alternative reflects the lowest average population size of all Alternatives.

The No Action Alternative obviously shows the highest overall population sizes with no management at this time to control growth rates or remove excess wild horses. The average population size exceeds 900 wild horses, with population increase into the thousands possible through the 10 year modelling period.

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

The results of the population modelling show that the Alternatives that implement an intensive fertility control program involving annual booster treatments would produce the lowest growth rates. The median trial reflects -2.1% for the Proposed Action and -1.7% for Alternative 2. The less intensive fertility control program modelled for Alternative 3 indicates a growth rate of 6.4%, resulting from gathers (and removals) every 3 years with the application of PZP-22 and no booster program. The non-fertility control Alternatives (Alternative 1 and the No Action), both reflect median trial growth rates above 20%.

The modelling shows that the low and potentially negative growth rates of the Proposed Action and Alternative 2 would result in population decline. However, neither Alternative showed the ability to reach the established AML ranges over the course of 10 years. It is realistic that periodic removals through helicopter and bait and water trapping under the Proposed Action would enable the AML range to be realized. The following table shows the average growth rates produced for each Alternative through the modelling.

Table 15: Median Trial for Average Growth Rates in 11 years

Trial	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	-10.8	9.9	-11.6	-1.5	15.6
Median Trial	-2.1	20.7	-1.7	6.4	20.5
Highest Trial	2.0	26.8	2.0	11.9	25.9

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

Neither the No Action nor Alternative 2 include any gathers to remove wild horses. Both Alternative 1 and 3 were modelled to show gathers occurring every 3 years with removals of only horses 4 years of age or younger. No fertility control would be implemented under Alternative 1, whereas PZP-22 would be implemented for Alternative 3. The differences between the Alternatives include nearly double the number of wild horses removed over the next 10 years under Alternative 1 without the use of fertility control. Additionally, the numbers gathered are higher under Alternative 1, assumedly due to the larger population size. Between these two alternatives, the fertility control Alternative 3 shows the lowest average population size, lowest growth rates, and lower numbers of wild horses gathered and removed over the next 10 years.

The Proposed Action was modelled to show the annual booster treatment of mares having been treated with PZP rather than regularly scheduled gathers to re-treat and remove wild horses (as for Alternative 3). Under this scenario, the “Removal Only” setting was used to show the population level effects of retreatment without removals in order to model potential effects of booster treatment, knowing that within this Alternative, there could be future removals as needed to meet population targets as allowed through the National gather schedule. In order to model this, the initial gather in 2015 was not included. The estimated post gather population was used as a starting point for the model with an initial population of 300-349 wild horses. An estimated 500-549 wild horses would be gathered in 2015 with 200 removed at that time.

The Proposed Action assumes another gather event near the year 2020 to capture, re-treat mares with PZP-22 or current formulation, apply identification marks to mares, and implement limited removals of an estimated 200 wild horses. Approximately 400 wild horses would be gathered to accomplish this in 2020. Bait and water trapping could be used to booster mares with ZonaStat-H and re-treat or initially treat mares with PZP-22 throughout the 10 years. For the purposes of this analysis, it was estimated that 50 horses would be captured through bait and water trapping in each of 2017-2019 and 2012-2023 for a total of 600 trapped. Should additional wild horses be removed during bait and water trapping or through one or more helicopter gathers, it is estimated that the established AML could be achieved by year 2022.

The following table reflects the results of the modeling. The Action Alternatives reflecting the lowest results are shaded in gray. Those with the highest figures are identified in red font. The initial gather, removal and treatment figures for the Proposed Action Alternative are not reflected since the modelling was set to begin with the estimated post gather population. Since numbers gathered are not representative for the Proposed Action or Alternative 2, they were not identified for highs and lows. The “gathered” numbers do reflect the degree of intensity required for the management program under each Alternative.

Table 16: Modeling Summary Table – Median Trial

Alternative	Minimum Populations	Average Populations	Maximum Populations	Average Growth Rates	Gathered	Removed	Treated
Proposed Action FC/Darting	314	408	506	-2.1	3633	400*	1486
Alternative 1 No FC	168	366	597	20.7	1546	1000	0
Alternative 2 FC No Removals	494	627	752	-1.7	5664	0	2602
Alternative 3 CTR/SRA	178	342	598	6.4	1320	634	244
No Action	592	1829	3910	20.5	0	0	0

Since the Proposed Action components are not reflective of the current population model, the following table is included to display potential and estimated gather and removal numbers.

Table 17: Gather and Removal Estimates – Proposed Action

Capture Method	Gather	Remove
Helicopter 2015	500-549	200
Helicopter est. 2020	400	200
Bait and Water Capture	600	TBD (est. 60)
Total	1500-1549	400-460

Summary

The WinEquus Population Model was utilized to display potential outcomes for the various management activities under the Proposed Action and Alternatives, including a No Action Alternative. The model shows that the use of a fertility control vaccine to reduce growth rates would reduce population size over time. The model also shows that the use of fertility control in combination with removals could reduce the population to within the established AML range of 101-170 wild horses, and could reduce or eliminate the need to remove wild horses from the range. Without removals, an intensive fertility control program of initial treatment and boosting would be necessary to effect reductions in population growth rates and population size, but would not bring the population to within the AML range.

A scenario without using fertility control would require the removal of nearly double the number of wild horses, to approach the AML range over the next 10 years, with high gather numbers to conduct selective removal to only remove younger adoptable wild horses. A less intense program of periodic gathers to continue the PZP-22 program would also reduce the population to near or within the AML range. Without the annual boosting program, however, gather and removal numbers would be higher than that reflected for the Proposed Action.

Finally, the No Action Alternative would allow population growth to continue, with population size eventually exceeding the ability of the range to support wild horses.

Refer to Appendix E for more information about the Modelling and more detailed tables and graphs.

3.3. Livestock Management

Affected Environment

Detailed information about the authorized livestock use within these HMAs is provided in the documents identified in Section 1.5. Refer to Map 1 which displays the Allotment boundaries in addition to the HMA boundaries within the proposed gather area. No additional changes to the livestock management systems have taken place since issuance of the most recent gather EA in 2005.

In 2004, a comprehensive Rangeland Health Assessment was completed for the Fish Creek Complex, which included the Fish Creek Ranch, Lucky C, Romano, Ruby Hill and Arambel Allotments. The analysis of the data resulted in the conclusion that several RAC Standards for Rangeland Health and allotment specific objectives were not being met throughout the Complex, and that changes in livestock use were needed in addition to establishing and achieving AML for wild horses within the Fish Creek and Whistler Mountain HMAs. With the exception of the Fish Creek Ranch Allotment, carrying capacity analyses were completed for all the allotments within the Fish Creek Complex using utilization, monitoring and actual use data for wild horses and livestock. As a result, livestock management systems were implemented for each allotment, which included changes in season of use and changes to permitted use. A carrying capacity was not completed for the Fish Creek Ranch Allotment in 2004 due to insufficient data, lack of livestock use and the wild horse population being over the AML during the evaluation period. However, a grazing management system was developed that retained the permitted use and AML established in 1994 (following a carrying capacity analysis and issuance of an FMUD) and modified the season of use. These changes to livestock management were implemented through the FMUD issued in September 2004.

This EA does not propose changes to livestock management. When changes to livestock management are proposed, they would be analyzed through a site-specific environmental assessment. Future completion of Rangeland Health Assessments would involve the analysis of monitoring data, potential carrying capacity calculations and adjustments to livestock grazing, and would include participation from the interested public.

Allotments within Fish Creek HMA

Refer to the 2004 Fish Creek Complex Rangeland Health Evaluation and FMUD for more detailed information about the livestock grazing permitted within the proposed gather area.

The grazing allotments included within the proposed gather areas are displayed in the table below. The Lucky C Allotment reflects only the portion south of U.S. Highway 50.

Table 18: Allotment Overview – Fish Creek HMA

Allotment	% of Allotment in HMA	% of Allotment in Non-HMA
Arambel	97%	3%
Fish Creek Ranch	48%	51%
Lucky C	76%	24%
Ruby Hill	46%	54%

The four grazing allotments (south of U.S. Highway 50) total approximately 417,000 acres in size. The Fish Creek HMA overlaps 230,675 acres or approximately 55% of the grazing allotment acreage.

The permitted use for these allotments totals 8,855 AUMs annually. Since 2009 (the past six years), the average actual use within these allotments has been 5,530 AUMs or 62% of the permitted use. In 2014, the actual use was 4,353 AUMs or 49% of the permitted use. As noted in the tables below, some years reflect the amount of use that was billed and may not reflect the actual AUMs used by livestock.

The tables below display the actual use¹⁵ that has occurred within these areas within the past five years. The grazing allotment and pasture boundaries within the allotments do not correspond to the HMA boundaries, and therefore, permitted use and actual use within these allotments does not perfectly correspond to (and may overstate) use by livestock within the HMA boundaries.

Table 19: Arambel Allotment Actual Use (AUMs)

Year	Arambel Allotment Sheep Permit AUMs
2009	254
2010	474
2011	646
2012	383
2013	324
2014 (billed)	761
Average	474
Permitted Use	1349

There is a total of 1,349 AUMs allocated to sheep use in the Arambel Allotment. The season of use ranges from 4/15 to 10/31, annually. From 2009 to 2014 the actual use within the Arambel Allotment ranged from 19% to 56% of permitted sheep AUMs.

Table 20: Fish Creek Ranch Allotment Actual Use (AUMs)

Year	Fish Creek Ranch Allotment Cattle Permit 1 AUMs	Fish Creek Ranch Allotment Cattle Permit 2 AUMs	Fish Creek Ranch Allotment Sheep Permit AUMs
2009	1369***	1,932*	431*
2010	1174**	2091***	543***
2011	1054**	1,994*	802***
2012	1390**	1414***	102***
2013	1386**	2402**	0**
2014 (billed)	961**	887**	602**
Average	1222	1787	413
Permitted Use	1,500 AUMs	2513 AUMs	802 AUMs

*Operator different than Current Operator

**Reflects billed AUMs

***Both: operator different than current operator and reflecting billed AUMs

There is a total of 4,815 AUMs allocated to livestock use in the Fish Creek Ranch Allotment. Of the 4,815 AUMs allocated to livestock, 4,013 AUMs are allocated for cattle use and are split between two separate permits (Antelope Valley and Little Smoky Valley). The remaining 802 AUMs are allocated for sheep use (Ninemile Peak Use Area). Very little of the Little Smoky Valley Use Area is within the

15. If actual use was not submitted by the permittee then billed use was used instead.

Fish Creek HMA. From 2009 to 2014 the actual use within Fish Creek Ranch Allotment ranged from 46% to 94% of permitted cattle AUMs and 0% to 100% of sheep AUMs.

In 2014, unauthorized livestock were documented grazing consistently for six months outside the permitted use within the Antelope Valley Use Area of the Fish Creek Ranch Allotment. Additionally, in 2012 unauthorized sheep were documented in the Nine Mile Use Area that grazed consistently for through the winter and outside permitted use. The unauthorized use, especially in Antelope Valley, and Fenstermaker Wash has exacerbated the current vegetative conditions in light of Severe and Extreme drought and overpopulation of wild horses. The BLM has and will continue to pursue corrective action regarding unauthorized livestock use on public lands.

Table 21: Ruby Hill Allotment Actual Use (AUMs)

Year	Ruby Hill Allotment Sheep Permit AUMs	Ruby Hill Allotment Cattle Permit AUMs
2009	700	0***
2010	213	0***
2011	486	171
2012	341	197
2013	144	258
2014 (billed)	278**	248**
Average	360	146
Permitted Use	1011 AUMs	275 AUMs

*Operator different than Current Operator

**Reflects billed AUMs

***Both: operator different than current operator, and reflecting billed AUMs

There is a total of 1,286 AUMs allocated to livestock use in the Ruby Hill Allotment. Of the 1,286 AUMs allocated to livestock use, 1,011 AUMs are allocated to sheep use and 275 AUMs are allocated to cattle use. From 2009 to 2014 the actual use within the Ruby Hill Allotment ranged from 14% to 69% of permitted sheep AUMs and 0% to 94% of cattle permitted AUMs.

Table 22: Lucky C Allotment Actual Use (AUMs)

Year	
2009	1400**
2010	749**
2011	1400**
2012	1400**
2013	454**
2014 (billed)	616**
Average	1128
Permitted Use	1405 AUMs

**Reflects the billed AUMs

The Lucky C Allotment exists both north and south of U.S. Highway 50. The Fish Creek HMA is located on both sides of the highway; however, this EA only covers the portion of the HMA south of the highway. Of the portion located south of U.S. Highway 50 there are 1,405 AUMs allocated to cattle use. The permitted season of use is from 4/15 to 2/28, annually. From 2009 to 2014 the actual use south of Highway 50 within the Lucky C Allotment ranged from 32% to 100% of permitted cattle AUMs.

Drought Actions

On February 5, 2008, the MLFO issued a decision closing the winterfat plant communities within the Fish Creek Ranch and Seven Mile Allotments stating poor vegetative conditions and reduced production due to drought. The closure was in effect through the 2008 and 2009 grazing season and was lifted on January 19, 2010.

In 2012 the BMD issued the Battle Mountain District Drought Management Environmental Assessment (DOI-BLM-NV-B000-2012-0005-EA) in order to address drought related impacts across the BMD. Starting in 2012 to present (2014), livestock numbers have been reduced across the District through voluntary agreements by permittees and through Decisions issued by the BMD in light of reduced forage and water and to protect resources from overuse. Drought utilization and stubble height triggers were implemented to facilitate monitoring and subsequent management actions. Within the Allotments in the Fish Creek HMA, voluntary reductions were also made in livestock AUM¹⁶s. For the 2014 grazing year the following reductions in AUMs occurred: Arambel Allotment 44%, Fish Creek Ranch Allotment 49%, Ruby Hill Allotment 59% and in Lucky C Allotment 56%.

Environmental Consequences

Proposed Action

The Proposed Action would not directly affect livestock operations within the grazing allotments. If livestock are present during gathers, livestock may be temporarily disturbed. Any bait or water trapping or darting of wild horses has the potential to disturb livestock. The BLM would work closely with affected livestock permittees to prevent conflicts.

The effects of wild horse populations on livestock, wildlife, and vegetation resources are largely functions of dietary and spatial overlap between species. In some cases wild horses utilize rangeland that livestock do not; in other cases, a 1:1 relationship exists. Additionally, most livestock permits do not allow for year-round use of the allotments, whereas wild horses inhabit these areas on a continual year-round basis.

The most notable effects of achieving the established wild horse AML would be indirect and beneficial through reducing impacts caused by an overpopulation of wild horses, particularly throughout low elevation winter range, heavily utilized riparian areas and around water developments. Removal of wild horses from outside the HMA boundaries where they are not allocated for use would eliminate the competition between wild horses and livestock in those areas, and reduce use levels on the vegetation. Managing wild horses within the established AML ranges, would promote a thriving natural ecological balance between wild horses and other resource values, improve the quality and quantity of forage available throughout these areas, and contribute to improved rangeland health.

Impacts that differ by Action Alternative

The effects of the action alternatives to livestock would be from the growth rates and population size of wild horses. The Proposed Action has the potential to provide the greatest opportunity for range resources to improve, if successful fertility control is implemented and if sufficient removals of excess wild horses occur in future gathers to achieve the established AML. These indirect impacts decline as average population size increases between the Alternatives. The lowest average population size could

¹⁶ 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).

be accomplished through Alternative 1 or 3 which both involve the periodic removal of wild horses through helicopter gathers.

Alternative 2 would not slow population growth enough to achieve the established AML within 10 years and excess wild horses would continue to utilize forage not allocated to them and compete with livestock and wildlife for that forage. This Alternative would result in the greatest impacts to riparian and upland resources and would promote the least recovery or improvement of rangeland health. Achieving and maintaining AML over the next decade would allow for the most benefits to livestock in terms of reduced competition, and utilization levels consistent with the carrying capacity analyses and grazing management plans.

No Action

There would be no direct impacts to livestock from gather operations under the No Action Alternative. Authorized livestock operations and range resources would continue to be impacted by the overpopulation of wild horses, inside and outside of HMA boundaries. Impacts of the No Action Alternative could include continued resource deterioration resulting from competition between wild horses and livestock for water and forage, reduced quantity and quality of forage, the inability to graze livestock on public lands due to insufficient forage quantity and quality.

3.4. Noxious Weeds, Invasive and Non-native Species

Changes in plant community composition from invasion of non-native plants into areas of native plant communities can negatively affect wildlife, livestock and wild horses by changing fire regimes, habitat structure, and available forage.

Noxious weeds, invasive and non-native species are highly competitive, aggressive and easily spread by people, equipment, animals and by natural processes, such as wind and water. Any surface disturbance activity can create a potential environment for noxious weeds, invasive and non-native species. The potential for increased weed infestations rises proportionally with increased cultural activities such as road maintenance, grazing and recreational use, primarily off-highway vehicle (OHV) use. In addition, contaminated equipment or vehicles provide an environment for seed dispersal and establishment into new areas. Heavy use of the range by an overpopulation of wild horses and concentrated use of springs can promote the spread of weeds through reducing competition by perennial native species and increasing ground disturbance through trampling and trailing.



Winterfat community (light gray) invaded with halogeton, Russian thistle and annual mustard (foreground). Antelope Valley June 2014.

Noxious weeds and invasive plant species have been defined as pests by law or regulation. The BLM defines a noxious weed as, “a plant that interferes with management objectives for a given area of land at a given point in time.” An invasive species is defined as a species that is non-native to the ecosystem

under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (EO 13112, signed February 3, 1999).

Several laws authorize control of noxious weeds, invasive and non-native species on public land under the BLM’s administrative jurisdiction (e.g., The Federal Insecticide, Fungicide and Rodenticide Act [1972], Federal Noxious Weed Act [1974], FLPMA [1976], and the Public Rangelands Improvement Act [1978]). Additionally, Executive Order 13112 outlines the federal responsibility to “prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.”

The Nevada Revised Statutes, Chapter 555 - Control of Insects, Pests and Noxious Weeds, mandates the extent that land owners and land management agencies must control specific noxious weed species on lands under their jurisdiction. BLM Nevada recognizes the current noxious weed list designated by the Nevada Department of Agriculture, found in the Nevada Administrative Code, Chapter 555, Section 010 (NAC 555.010).

Noxious weeds, invasive and non-native species are known to exist on public lands within the administrative boundaries of the Fish Creek HMA and are a concern for site function and productivity, threatening biodiversity, habitat quality and ecosystems stability. Guidelines for managing noxious weeds, invasive and non-native species in the Fish Creek HMA have been followed in accordance with the BMD Integrated Weed Management (IWM) Plan.

The entire Fish Creek HMA Project Area has not been inventoried for the presence of noxious weeds, invasive and non-native species. However, of the 47 species designated as noxious by the State of Nevada, several species have been documented within the area. The most prevalent non-native species within the Fish Creek HMA include the invasion of winterfat communities by halogeton, Russian thistle and annual mustard. The following table identifies the known noxious weeds as well as other known invasive or non-native plant species.

Table 23. Known noxious weeds, invasive and non-native species

Scientific Name	Common Name	Fish Creek HMA
Designated Nevada Noxious Weeds		
<i>Lepidium draba draba</i>	Hoary cress	√
<i>Carduus nutans</i>	Musk thistle	√
<i>Onopordum acanthium</i>	Scotch thistle	
<i>Acroptilon repens</i>	Russian knapweed	√
<i>Lepidium latifolium</i>	Perennial pepperweed	√
<i>Hyoscyamus niger</i>	Black henbane	√
Invasive and/or Non-Native Species		
<i>Cirsium vulgare</i>	Bull thistle	√
<i>Salsola iberica</i>	Russian thistle	√
<i>Bromus tectorum</i>	Cheatgrass	√
<i>Halogeton glomeratus</i>	Halogeton	√

Environmental Consequences

Proposed Action

There is low to moderate potential for noxious weeds, invasive and non-native species to establish and spread following the gather, depending upon site specific conditions. This could occur if vehicles drive through infestations and spread seed into previously weed-free areas or inadvertently carry seeds that are attached to vehicles or equipment. This is of particular concern if a gather crew moves from valley to valley.

Areas most vulnerable to establishment of noxious weeds, invasive and non-native species are heavily disturbed areas such as trap sites and temporary holding facilities. The COR/PI would examine proposed gather sites and holding corrals for weed infestations prior to set-up to reduce the potential for weeds to invade other sites. If weed infestations are found, a different location would be selected. Any equipment or vehicles exposed to weed infestations or arriving on site carrying dirt, mud, or plant debris would be cleaned before moving into or within the project area. Following BLM policy, IWM practices including continued treatments throughout the area would help control the spread of weed infestations along roadsides and other areas used during gather operations.

Noxious weeds, invasive and non-native species can also spread into disturbed areas such as denuded and degraded areas subject to heavy or severe utilization or to trampling damage. Healthy rangeland supports native shrubs, understory grasses and forbs that remain intact and compete with the noxious weeds, invasive and non-native species.

The Proposed Action and Action Alternatives would promote improved condition of plant communities and reduce the vulnerability of the project area to weed infestations. Managing wild horse populations within the established AML would reduce the potential or occurrence of over utilization of vegetation or severe trampling and trailing. When the recovery of drought stressed vegetation begins to improve and become more resilient, native vegetation will better compete and help protect against invasive and non-native species such as halogeton, Russian thistle and cheatgrass. Despite short-term risks of the introduction and spread of weeds, over the long term, achieving and maintaining AML and the subsequent recovery of the native vegetation the susceptibility of these areas to non-native plant species invasion would be reduced.

Impacts that differ among Action Alternatives

The indirect impacts would be in relation to the size of the population on the range relative to the established AML, and wild horse gather operations that could be implemented. Maintaining the population of wild horses at AML would offer the best opportunity to promote healthy rangelands and lessen the risk of further invasion by noxious weeds, invasive and non-native species. The Proposed Action, Alternatives 1 and 3 have the potential to see the population achieve the AML within 10 years, should adequate removals of excess wild horses occur in combination with PGS (Proposed Action and Alternative 3). Alternative 2 would likely not see the achievement of the AML within 10 years, and excess wild horses would continue to affect rangeland health, increasing the potential for continued spread of noxious weeds, invasive and non-native species. Alternative 3, with repeated removals of excess wild horses and the implementation of fertility control could see the AML achieved the soonest, and maintained thereafter. Refer to the Population Modeling discussion in Section 3.2 for more information about the potential population size, growth rates, and gather and removal numbers for each Alternative.

Gather operations, whether by helicopter drive trapping or bait and water trapping would cause soil disturbance and could lead to increased presence of noxious weeds, invasive and non-native species in the areas surrounding the trap corrals or holding corrals. Most trap and corral locations would be placed in previously disturbed areas so not to disturb native, intact rangeland vegetation. It is not possible to discern which Alternative would have the greatest impact at trap or holding corrals, as the number of corrals needed under each Alternative is not known and would depend on site specific circumstances.

No Action Alternative

Under the No Action Alternative, no wild horse gathers would occur and there would be no direct impacts expected. Currently, the population of wild horses in the Fish Creek HMA is over 300% of the established AML resulting in heavy use of rangeland vegetation, widespread trailing and disturbance to riparian areas. These impacts have been further compounded by the effects of severe drought on forage and water availability, causing concentrated use by wild horses on remaining resources. Under the No Action Alternative, these impacts would continue and would increase as the wild horse population continues to grow and resources are consumed.

Wild horses would continue to trail farther out from limited water sources to foraging areas, subsequently broadening the areas receiving heavy grazing or trailing use. Indirect impacts include increased competition for forage among multiple-users of the range. Forage utilization would exceed the capacity of the range, resulting in a loss of desired forage species from plant communities as plant health and watershed conditions deteriorate. Abundance and long-term production potential of desired plant communities would be further compromised. Winterfat communities throughout the lower elevations within and outside of the HMA have been suffering from drought since 2012. Continued heavy use will contribute to the conversion of native plant communities into low diversity non-native communities such as halogeton, Russian thistle and cheatgrass.

Under The No Action alternative, increased wild horse numbers and continued overgrazing would increase the risk of the establishment and spread of noxious weeds, invasive and non-native species in disturbed and degraded areas, resulting in a reduction of native perennial species and degradation of habitat quality.

3.5. Rangeland Vegetation, Soils, Climate and Drought

The terrain varies from low valleys (6,300 feet) to high mountains over 10,000 feet at Ninemile Peak. Vegetation types are distributed according to topography, elevation, and precipitation.

Climate and Drought

The climate of the area is characteristic of the Great Basin with relatively low precipitation in valleys and lower elevations (6-8" per year), and higher precipitation in the higher elevations (12-14" per year). Summers are hot and dry, with daytime temperatures ranging from 70-100+ degrees. Winters are generally cold with snowfall highly variable from year to year. During mild winters, little snow accumulates and is restricted to higher elevations and northern slopes. Heavier winters are marked by widespread snow into the valleys and deep snow in the mountainous areas that precludes use by animals. Temperatures may fall to below zero, with daytime temperatures ranging from 0-50 degrees.

The precipitation patterns for central Nevada meet the definition for drought 3-4 years out of every 10. Since the last gather completed in 2006, the 3 weather stations assessed for this EA reflected below normal precipitation or drought conditions 67-78% of the years. Precipitation tables, summary of monitoring data collected and other pertinent information is available in Appendix D.

Inherently low annual precipitation levels and drought are issues throughout central Nevada affecting current health of vegetation communities and the ability for recovery of the rangeland vegetation from past over use by wild horses and livestock. Potential vegetation production is low, especially in lower elevations and can be markedly reduced or non-existent during periods of drought. During periods of drought, forage availability for livestock, wildlife, and wild horses is further reduced and it becomes more important to prevent overgrazing of perennial plants. Improper grazing during drought can harm or kill the perennial plants that grazing animals rely on.

On February 5, 2008, the MLFO issued a decision closing the winterfat plant communities within the Fish Creek Ranch and Seven Mile Allotments stating poor vegetative conditions and reduced production due to drought. The closure was in effect through the 2008 and 2009 grazing season and was lifted on January 19, 2010.

In 2012, 2013 and 2014 precipitation was far below normal levels resulting in Severe and Extreme drought conditions across much of Nevada. The Fish Creek HMA was severely affected as evidenced by reduced growth of grasses and winterfat, poor vigor and early senescence (dormancy) of plants (including deep rooted shrubs), plant death and lack of reproduction.

No weather stations exist in close proximity of the Fish Creek HMA that provides precipitation data. The nearest and most dependable weather stations are located in Eureka and at the University of Nevada, Reno Gund Ranch in Grass Valley, Nevada.

The following tables provide an overview of 2012-2014 precipitation data from these stations for the year and the growing season. This data was obtained from the Western Regional Climate Center website: <http://www.wrcc.dri.edu/summary/Climsmnv.html>

Table 24: Growing Season and Year to Date Precipitation, 2012

2012 Growing Season and Year to Date Precipitation	Weather Station	
	Eureka	Gund Ranch
	Inches Received (% of Period of Record Average)	
March - June 2012 (growing season)	3.11" (63%)	2.38" (56%)
Year (January through December)	11.27" (95%)	5.27" (52%)

Table 25: Growing Season and Year to Date Precipitation, 2013

2013 Growing Season and Year to Date Precipitation	Weather Station	
	Eureka	Gund Ranch
	Inches Received (% of Period of Record Average)	
March - June 2013 (growing season)	1.57" (32%)	1.89" (44%)
Year to date (January through December)	9.81" (83%)	9.71" (95%)

Table 26: Growing Season and Year to Date Precipitation, 2014

2014 Growing Season and Year to Date Precipitation	Weather Station	
	Eureka	Gund Ranch
	Inches Received (% of Period of Record Average)	
March – June 2014 (growing season)	3.32" (67%)	3.06" (72%)
Year to date (January through October)	8.73" (74%)	7.95" (78%)

The average precipitation identified in the above tables represents the Period of Record Average provided on the website. For more information about drought in the western United States, please refer to the websites identified in Appendix D. As the above tables show, precipitation received during 2012, 2013 and 2014 is below the Period of Record Average, as was the precipitation received during the growing season. Uncharacteristically high precipitation levels in the form of late summer showers occurred July-October and is reflected by both weather stations. Though data differed by year and station, precipitation levels were as high as 200-300% of the average during this time frame. These late summer showers provided much needed moisture to enable fall re-growth of plants. In some cases, fall growth of grasses and shrubs exceeded what occurred during spring months. Some recharge of water sources also occurred, though not enough to reflect full recovery. Refer to the precipitation tables and other data included within Appendix D for more information.



Antelope Valley drought affected and degraded winterfat communities June 29, 2014.



Fenstermaker Wash area dead sagebrush communities and large expanses of bare ground. June 29, 2014.



Shrub stems chewed to the ground level. June 29, 2014.



Drought affected Indian ricegrass plant. June 29, 2014

Rangeland Vegetation Communities

Many valley bottoms within the Fish Creek HMA support salt desert shrub plant communities such as winterfat (*Krascheninnikovia lanata*) and shadscale (*Atriplex confertifolia*). Lower elevations also support black sagebrush (*Artemisia nova*), Wyoming big sagebrush (*Artemisia tridentata ssp wyomingensis*) and various understories comprised of forbs and perennial grasses. Pinyon pine (*Pinus monophylla*) and Utah Juniper (*Juniperus osteosperma*) communities (pinyon/juniper) are prevalent throughout mid and high elevations within the Project Area. Cottonwood (*Populus spp.*) and aspen (*Populus tremuloides*) stands are present in high elevations. Mountain big sagebrush (*Artemisia tridentata ssp vaseyana*), antelope bitterbrush (*Purshia tridentate*), snowberry (*Symphoricarpos spp.*), serviceberry (*Amelanchier spp*) and curleaf mountain mahogany (*Cercocarpus ledifolius*) with an understory of perennial bunchgrasses are common throughout the higher elevations. Refer to the 28B MLRA Natural Resource Conservation Service (NRCS) for more information. Table 27 summarizes the major range types listed and characteristics pertinent to each.

Table 27: Soil Types and Ecological Sites of the Fish Creek HMA

Site Number	Site Name	Precipitation Zone	Major Vegetative Species		Soil Factors
			Grass	Shrubs/Trees	
028BY003	Loamy Bottom	10-14"	Basin wildrye (LECI4), Nevada bluegrass (POSE)	Basin big sagebrush (ARTRT), rubber rabbitbrush (ERNA10)	Deep, well drained, susceptible to gullyng
028BY004	Saline Bottom	6-10"	Basin wildrye (LECI4), alkali sacaton (SPAI)	Black greasewood (SAVE4), rubber rabbitbrush (ERNA10)	Deep to very deep, calcerous, somewhat poorly to poorly drained
028BY007	Loamy	10-12"	Thurber needlegrass (ACTH7), bluebunch wheatgrass (PSSP6)	Big sagebrush (ARTR2), antelope bitterbrush (PUTR2)	Moderately deep to deep and well drained
028BY010	Loamy	8-10"	Indian ricegrass (ACHY), needleandthread (HECO26)	Wyoming big sagebrush (ARTRW8), rabbitbrush (CHRYS9)	Moderately deep to deep and well drained
28BY011	Shallow Calcareous Loam	8-10"	Indian ricegrass (ACHY), needleandthread (HECO26)	Black sagebrush (ARNO4), downy rabbitbrush (CHVIP4)	Shallow and well drained
28 BY013	Silty	8-10"	Indian ricegrass (ACHY), bottlebrush squirreltail (ELEL5)	Winterfat (KRLA2), bud sagebrush(PIDE4)	Deep to very deep and well drained
28 BY016	Shallow Calcareous Slope	8-10"	Indian ricegrass (ACHY), needleandthread (HECO26)	Black sagebrush (ARNO4), shadscale (ATCO)	Very shallow to a duripan, indurated hardpan or bedrock
28BY017	Loamy	5-8"	Indian ricegrass (ACHY), bottlebrush squirreltail (ELEL5)	Shadscale (ATCO), bud sagebrush (PIDE4)	Mixed alluvium and well drained
28BY020	Sodic Flat	5-8"	Alkali sacaton (SPAI), inland saltgrass (DISP)	Black greasewood (SAVE4), shadscale (ATCO)	Deep and somewhat poorly to well drained

Site Number	Site Name	Precipitation Zone	Major Vegetative Species		Soil Factors
			Grass	Shrubs/Trees	
28BY024	Loamy Bottom	14+”	Basin wildrye (LECI4), Nevada bluegrass (PONE3)	Mountain big sagebrush (ARTRV), willow (salix)	Deep to very deep and well to moderately-well drained
28BY027	Shallow Calcareous Slope	14+	Bluebunch wheatgrass (PSSPS), muttongrass (POFE)	Black sagebrush (ARNO 4)	Generally shallow to very shallow and well drained
28BY029	Loamy	16+	Mountain brome (BRMA4), Letterman’s needlegrass (ACLE9)	Mountain big sagebrush (ARTRV), snowberry (SYMPH)	Moderately deep to deep and well drained
028BY030	Loamy	12-16”	Bluebunch wheatgrass (PSSP6), Thurber needlegrass (ACTH7)	Mountain big sagebrush (ARTRV), antelope bitterbrush (PUTR2)	Deep to very deep and well drained
28BY037	Claypan	12-14”	Bluebunch wheatgrass (PSSP6), needlegrass (ACHNA)	Low sagebrush (ARAR8), antelope bitterbrush (PUTR2)	Shallow to moderately deep and well drained
28BY038	Mountain Ridge	14+	Bluebunch wheatgrass (PSSPS), muttongrass (POFE)	Sagebrush (ARTEM)	Mostly shallow to very shallow
28BY042	Mahogany Thicket	14+	Bluebunch wheatgrass (PSSP6), Thurber needlegrass (ACTH7)	Mountain big sagebrush (ARTRV), snowberry (SYMPH)	Moderately deep to deep to bedrock and well drained
28BY043	Calcareous Mahogany Savanna	14+	Bluebunch wheatgrass (PSSP6), needlegrass (ACHNA)	Mountain big sagebrush (ARTRV), snowberry (SYMPH)	Deep to bedrock and well drained
29XY052	Claypan	16+	Letterman’s needlegrass (ACLE9), muttongrass (POFE)	Low sagebrush (ARAR8)	Shallow to moderately deep

Vegetation communities are highly variable throughout the HMA as the above table indicates. Similarly, vegetation condition and health varies considerably across the HMA due to historic use levels by wild horses, and livestock, inherent precipitation levels and natural soil capability. Extensive monitoring was completed for analysis within the Fish Creek Complex Rangeland Health Assessment completed in 2004. Refer to this document (and the others) identified in Section 1.4 for additional detail about the vegetation communities in this area.

Across the HMA, most vegetation communities can be characterized as supporting a lower amount of perennial key species than should be present. Historic use or over use by grazing animals has contributed to the vegetation conditions in the HMA. Since the 2004 Rangeland Health Assessment, minor improvement has been noted within the Lucky C Allotment through increased abundance and vigor of Sandberg’s bluegrass in the lower elevations and increased Indian ricegrass and other perennial bunchgrasses in the mid elevations. The understory grasses have also improved slightly in the Arambel Allotment. Throughout the Fish Creek Allotment most mid and high elevation sites in the central portion of the allotment do not support productive stands of grasses in the understory due to historic use, and inherent productivity of the soils. The southern portion of the HMA supports increased productivity of grasses throughout the higher elevations where pinyon and juniper stands do not exist in thick stands that preclude healthy and diverse understories. Winterfat communities of the Fish Creek HMA have fluctuated in condition due to use levels by wild horses and livestock and precipitation levels and timing.

Since 2012, winterfat growth has been severely stunted due to lack of precipitation. Late summer rain storms have provided for some regrowth and even flowering and seed set. Halogeton, Russian thistle and annual mustard are undesirable and invasive species and are prevalent in the low elevation winterfat communities throughout Antelope Valley.

Refer to Appendix D for more information about the vegetation monitoring within the Fish Creek HMA.

Soils

The soils throughout the Project Area are highly variable and include soils comprised of clay, silt, sand, gravel, quaternary alluvial deposits and limestone derived from lake and wind deposits. The mountains, slopes and foothills of the entire area include soils derived from dolomite, limestone and various amounts of shale, sandstone (or quartzite), and silt. Biological crusts (cryptogamic or cryptobiotic) are present and consist of algae, lichen, fungi, moss, cyanobacteria and bacteria growing on or just below the soil surface. Biological crusts are known to aid in soil stabilization, soil fertility, water infiltration, and nutrient cycling. No surveys or inventories have been completed for biological crusts.

For more detailed information, please refer to the Soil Survey of Eureka County, Nevada (1989) available through the NRCS.

Soils in the lower elevations are silty and prone to erosion. Throughout Antelope Valley, increased occurrence of overland flow, gullies and washouts has occurred since 2012. Plant growth and abundance, and presence of deep rooted perennial species has decreased during the Severe and Extreme drought conditions experienced in the Fish Creek HMA, resulting in reduced soil stability. Bare ground is extensive and litter is limited. Mid and higher elevations typically maintain enough gravel, or small rocks to maintain soils; however, pedestalling of plants and erosion pavement are common indicating continued soil loss in these areas. Refer to the documents identified in Section 1.5 for more information.



Fish Creek HMA, Wild Horses in mixed sagebrush, pinion-juniper community during January 2014 Resource Flight.

Areas occupied by wild horses [and other grazing animals]¹⁷ have a significantly higher soil penetration resistance than areas without wild horses (Beever and Herrick 2006). This can affect a variety of other ecosystem processes, such as decreasing water infiltration rates, inhibiting digging by burrowing mammals, limiting plant establishment, and restricting root growth (E. Beever, R. Tausch, and P. Brussard 2003).

The relative quantity of vegetative cover removed by grazing also affects soil properties. In general, vegetative cover provides shading for soils, which increases their ability to retain moisture, reduces soil erosion by intercepting precipitation and reducing surface wind velocities, and provides organic input

17. Though the report is specific to wild horses, it is assumed that similar impacts would occur from other hooved animals such as livestock, elk, etc.

into the soil (Beever and Herrick 2006).

Trailing and hoof action by wild horses has the potential of accelerating erosion following intense storms or snow melt. Aerial and on the ground monitoring indicates heavy and increasing trailing by wild horses between limited water sources and foraging areas. Heavy wild horse utilization and trailing are decreasing vegetative cover, particularly in areas of water sources, resulting in increased compaction and bare ground which increases run off and soil erosion and decreased soil productivity.

As the wild horse population increases, there are comparable increases in trailing, and hoof action of uplands and riparian areas. This has been substantially compounded by reduced vegetation cover and drought conditions since 2012. Trailing has increased substantially as waters have become limited in the HMA, particularly in light of the continuing increase in the wild horse population.

Environmental Consequences

Impacts common to the Action Alternatives

Direct impacts associated with the action alternatives would consist of disturbance to vegetation and soils immediately in and around the temporary gather site(s) and holding facilities. Impacts would be created by vehicle traffic and hoof action as a result of concentrating horses at the gather site, and could be locally high in the immediate vicinity of the gather site(s) and holding facilities. Generally, these



Fenstermaker Wash December 2014, trailing through winterfat communities.



June 2012, in the northern portion of Antelope Valley. Wild horse trailing to the Slough.

sites would be small (less than one half acre) in size. Any impacts would remain site specific and isolated in nature. These impacts would include trampling of vegetation and soils. Impacts would be minimal as gather operations would have a short-term duration.

Ideally, gather corrals and holding facilities would be selected to enable easy access by transportation vehicles and logistical support equipment, and would be established near or on roads, pullouts, gravel pits, water haul sites or other flat areas, which have previously been disturbed to avoid impacts to unaltered vegetation and soils. These common practices would minimize the long-term effects of these impacts. Disturbance of soils and vegetation would be similar whether gather activities occurred through helicopter drive trapping or bait and water trapping.

Impacts from herding wild horses to the trap corrals would be minimal. Wild horses are typically herded distances averaging 4-7 miles over mixed terrain which may vary from rolling foothills to steeper terrain, drainages, ridges and valley bottoms. The horses often follow their own trails, which allow the

horses to travel easier by choosing their own path. Coincidentally, this allows the horses to travel over previously disturbed areas, which limits the amount of herding over undisturbed areas.

As the AML is achieved and maintained through periodic gathers and continued fertility control treatment, year-round utilization by wild horses would be reduced and heavy and severe utilization levels attributed to excess wild horses would cease, improving forage availability, vegetation density, cover, plant vigor, seed production, seedling establishment, and forage production over current conditions. Higher quality forage species (grasses) would be available. Competition for forage among wild horses, wildlife, and livestock would be reduced as the density of wild horses is reduced across the landscape, particularly in low elevation winter range. Utilization levels would decrease and allotment specific utilization objectives would not be exceeded. Physical damage to shrubs and herbaceous vegetation, and soil disturbance associated with the physical passage of horses would be decreased, as would heavy use and hedging of shrubs including shadscale.

Similar to other resources within the proposed gather area, soils would benefit both directly and indirectly if the wild horse populations are maintained within the established AMLs. In the Fish Creek HMA, the increase in population has concentrated wild horses on the limited water sources. As the wild horses exceed AML, the available forage closest to water becomes over utilized and the horses have to travel farther from water to find forage. Trails are formed due to constant perturbation and soil compaction. Monitoring in the Fish Creek HMA has shown extensive trailing within and outside of the HMA boundaries. Plants that are grazed repeatedly may have little or no opportunity to regrow between successive defoliations and may become stressed, and die, especially under drought conditions.

A healthy, productive, and diverse plant community plays an important role in the improvement and/or maintenance of soil processes such as permeability, infiltration rates and soil stability. Inadequate plant cover can lead to substantial wind or water erosion of valuable top soil (Reece et al. 1991). Crusting of surface soils is another problem associated with low vegetation cover. When rain strikes exposed soil the particles are detached by the raindrop energy (raindrop splash) and clog the remaining soil pores, making them smaller or sealing them completely resulting in a crust (Thurrow and Taylor 1999). This reduces water infiltration and increases erosion potential. Standing dead vegetation and litter reduces the impact of raindrop splash and promotes water infiltration, which in turn reduces water erosion. It is expected by removing excess wild horses the vegetation would be allowed to recover within the Fish Creek HMA, which would reduce the potential for accelerated wind and water erosion.

Reducing population growth rates and removing excess wild horses would promote improvements in riparian and upland vegetation condition and prevent further degradation from an over population of wild horses. Given the current condition of the vegetative resources, improvement would be slow 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 cycle, set seed and store carbohydrates before the end of the growing season are more capable of withstanding drought and maintaining their presence in the plant community.

Maintaining AML would support continued upward trend and promote progress towards attainment of Rangeland Health Standards. Upward trends and healthier rangeland would equate to healthier habitat and healthier animals. These trends would also benefit wildlife and would promote improvement of degraded habitat, consistent with IM 2012-043, *Greater Sage-Grouse Interim Management Policies and Procedures*.

Impacts that differ among Action Alternatives

The direct and indirect impacts to the vegetation resource would differ by Alternative as they relate to the average population size and the number of gathers that could occur over the next 10 years. Maintaining the population of wild horses at AML would offer the best opportunity to promote healthy rangeland plant communities and stable soils. The Proposed Action and Alternatives 1 and 3 have the potential to achieve the AML within 10 years, should adequate removals of excess wild horses occur in combination with PGS (Proposed Action and Alternative 3). Alternative 2 is not likely to achievement the AML within 10 years and excess wild horses would continue to negatively affect rangeland health. Alternative 3 with repeated removals of excess wild horses and the implementation of fertility control could achieve the AML quickest and maintain AML in the long-term. Refer to the Population Modeling discussion in Section 3.2 for more information about the potential population size, growth rates, and gather and removal numbers for each Alternative.

Gather operations, whether helicopter drive trapping or bait and water trapping would cause soil and vegetation disturbance. Most trap and corral locations would be placed in previously disturbed areas so not to disturb native, intact rangeland vegetation. It is not possible to discern which Alternative would have the greatest impact at trap or holding corrals, as the number of corrals needed under each Alternative is not known and would depend on site specific circumstances.

No Action

There would be no direct impacts as a wild horse gather would not occur under this alternative. Impacts to rangeland health in the form of trailing, heavy and severe utilization and heavy use of springs would continue as a result of the current overpopulation of wild horses. These impacts are further compounded by severe drought which has limited plant production and vigor, increased stress to rangeland plants and resulted in concentrated use of springs and foraging areas. Heavy utilization of forage by an overpopulation of wild horses would continue particularly in the lower elevations during winter months especially if snow precludes use of the mid and higher elevations. Wild horses would continue to trail farther out from limited waters to foraging areas, subsequently broadening the areas receiving heavy grazing or trailing use.

Heavy use of forage during the critical growth period would continue and if drought conditions persist or worsen, rangeland plants would be further stressed and degraded. The most heavily and repeatedly used areas would experience loss of perennial forage species. Lower and mid elevations would become further dominated by annual invasive species such as halogeton, Russian thistle and other invasive annuals as perennial bunchgrasses die off. The loss of perennial native grass, increased soil perturbation, and soil compaction, would increase soil loss from wind and water erosion and invasion of undesired plant species. Abundance and long-term production potential of desired plant communities would be further compromised potentially precluding the return of these vegetation communities to their potential as identified in ecological site descriptions published by the NRCS. Reduced ecological status would be indicated by lowered production and frequency of deep rooted perennial vegetation, reduced production of litter, reduced soil stability and reduced riparian functionality. Progress would not be made towards attaining Rangeland Health Standards.

3.6. Riparian-Wetland Resources and Water Quality

BLM Manual 1737, *Riparian-Wetland Area Management*, defines riparian zones as a form of wetland transition between permanently saturated wetlands and upland areas (USDI BLM 1992). These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and

streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian zones. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

Riparian-wetland areas are important to water quality, water quantity, and are critical for up to 80% of terrestrial vertebrate species (National Research Council, 2003). . They comprise only a small portion of the landscape, but are among the most productive and diverse of all terrestrial habitats, and the influence of moving water within stream riparian zones often results in rapid and dynamic habitat changes (Naiman et al. 1993). Unfortunately, the disturbance and successional patterns of riparian areas are highly vulnerable (Groeneveld and Or 1994, Busch and Scott 1995).

In addition to riparian, wetland and water quality objectives identified in respective RMPs, the Northeastern Great Basin RAC addresses riparian health in Standard 2: Riparian and Wetland Sites, and indirectly in Standard 3: Habitat. Standard 2 requires that riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria. BLM Technical References 1737-9, 11, 15 and 16 provide guidance and methodology for assessing riparian areas for properly functioning condition.

Riparian-wetland areas are classified as Lentic (i.e. springs, ponds, wet meadows) and Lotic (i.e. streams). To account for the different physical characteristics and functions, separate definitions for Proper Functioning Condition have been developed.

Lotic riparian-wetland areas are considered to be in Proper Functioning Condition when adequate vegetation, landform, or large woody debris is present to:

- dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve floodwater retention and groundwater recharge;
- develop root masses that help to stabilize streambanks against cutting action;
- develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and
- support greater biodiversity.

Lentic riparian-wetland areas are considered to be in Proper Functioning Condition when adequate vegetation, landform, or large debris is present to:

- dissipate energies associated with wind action, wave action, and overland flow from adjacent sites, thereby reducing erosion and improving water quality.
- filter sediment and aid floodplain development;
- improve floodwater retention and groundwater recharge;
- develop root masses that stabilize islands and shoreline features against cutting action;
- restrict water percolation;

- develop diverse ponding characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterbird breeding, and other uses;
- and support greater biodiversity.

In grazed areas, vegetation is often reduced or absent and the soil compacted, encouraging water to flow more quickly without allowing it to infiltrate the soil, resulting in higher peak flows and lower base flows in streams. Higher peak flows are more likely to reshape channels and to erode banks than lower flows. Additionally, with a reduced amount of water infiltrating the ground, less water will be available for plants and for perennial flow sources during the summer and fall.

Where the riparian area is grazed and vegetative cover is greatly reduced, stream bank stability is weakened from loss of vegetation and damaged from livestock or wild horses repeatedly and continuously entering and exiting the water source. Throughout the west, many riparian systems have been adversely impacted by domestic livestock grazing, particularly in summer months or when grazing is year round and proper management is lacking. Uncontrolled trampling of banks, utilization of vegetation and reduction of deep rooted hydrophytes (willow and sedge species) have impaired the stability of these systems, increasing erosion, channel incision, and reducing riparian function. Throughout the Fish Creek HMA, riparian condition and water quality vary depending on the local hydrology, type of surface water feature, elevation and historical use by livestock, wild horses or both. Generally, field observations indicated that wildlife had little impact on the Fish Creek HMA riparian systems, though these areas provide vital habitat to many species.

For wildlife and domestic species living in arid environments, the availability and location of water is critical, not only for drinking and cover, but also for high quality forage that maintains its palatability long after upland vegetation has desiccated in the hot season. Wild horses have been observed to travel great distances to and from water daily. During dry summer months, when less water is available from seasonal sources, horses remain slightly closer to perennial water sources than in the winter and spring (Ganskopp and Vavra 1986, R. Hansen, R. Clark, and W. Lawhorn 1977).

Horses have been found to have some effect on the frequency of use of a water source by other wildlife in arid environments. One study found that in areas where bighorn sheep and horse water sources overlapped, a higher frequency of horse use led to a lower frequency of bighorn sheep use, and vice versa (Ostermann-Kelm et al. 2008). The presence of wild horses at water sources is believed to deter the use of that water by pronghorn antelope until the horses leave the area.

Wild horses prefer to drink during the first part and last parts of daylight and tend not to linger at the water source (Ganskopp and Vavra 1986). In most cases, wild horses visit water sources briefly. The exception may include large open springs or meadow complexes, or when water is so limiting that the wild horses must remain at the site for hours in order to allow for enough recharge for them to drink. High wild horse population and density of animals in relation to limited water sources results in degradation of riparian and wetland habitat. Wild horses utilize lotic (streams) and lentic sites (springs) differently because of inherent social behaviors. Wild horses tend to move quickly away from lotic sites to avoid dangerous encounters with other wild horses or predators. Relative to lotic sites, lentic riparian areas tend to exist on topography with larger viewsheds (on hillsides and broader valleys) that allow animals to view further distances. Consequently, these sites tend to receive long duration and high frequency use that predisposes them to rapid degradation.

Wild horses impact riparian and wetland sites through hoof action, which causes compaction, bank shear, erosion, and hummocking. Wild horses also dig or paw sources with their hooves, especially when spring discharge is low, in an attempt to access the deeper groundwater. These actions result in drainage of subsurface water, channelization and shrinkage (and loss) of the riparian zone. Through concentrated and year-round utilization of riparian vegetation, wild horses decrease the plants' ability to photosynthesize and regrow, often leading to downward trends in riparian health. In addition to potential physical impacts to riparian areas, dominant studs can physically exclude other wildlife and livestock species.

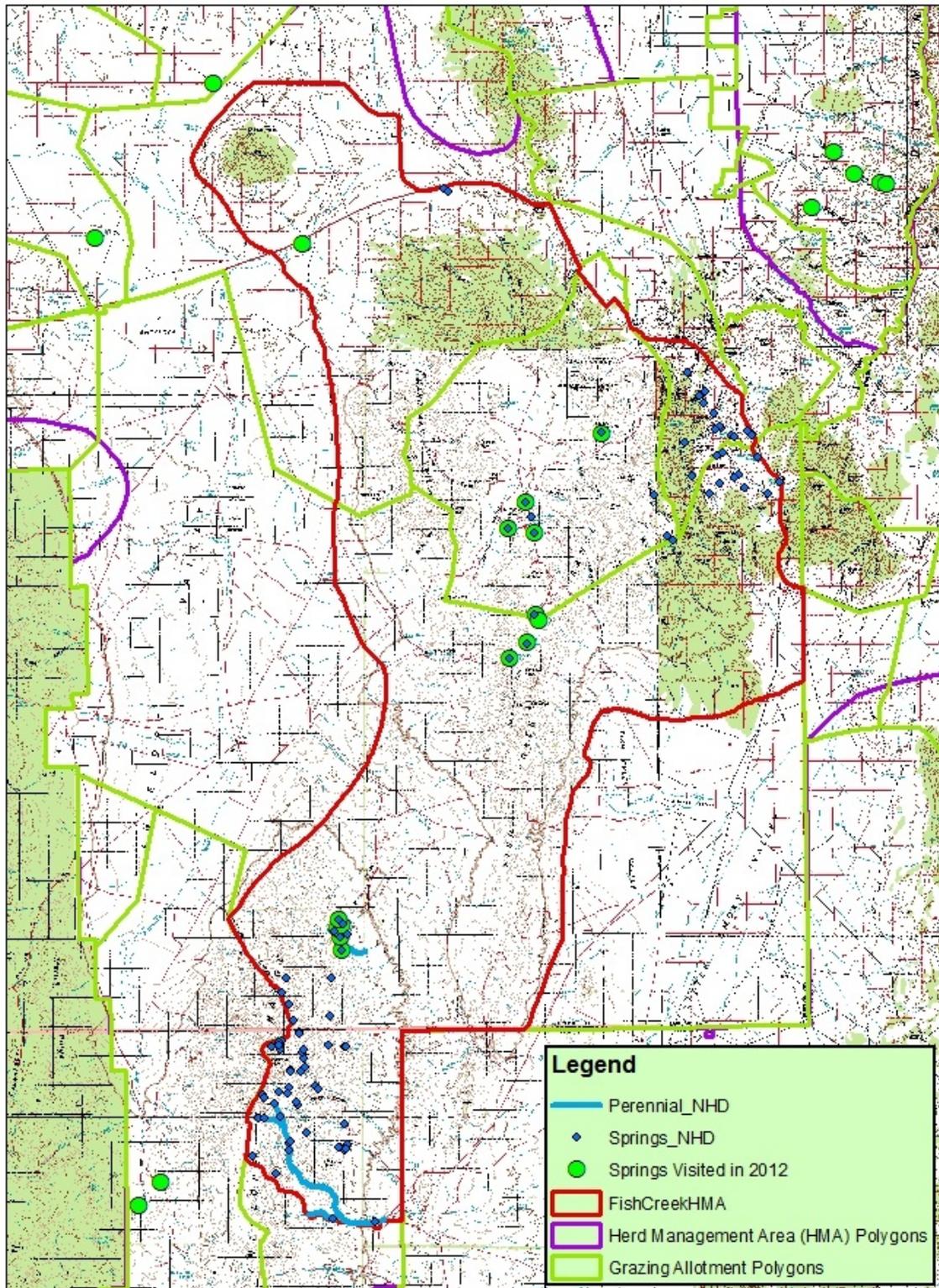
The Fish Creek HMA supports relatively limited water sources for wild horses and has been closely monitored since 2012 to ensure adequate water availability for wild horses. Although recent comprehensive surface water surveys have not been completed for the Fish Creek HMA, the US Geological Survey's National Hydrography Dataset (NHD), Version 210 (released 5/7/2014) indicates that there are 100 springs and 10.2 miles of perennial streams, which are concentrated in the mountainous portion of the HMA (see Map 3). However, it should be noted that stream and spring flow may have changed since the initial surveys that were used to develop the NHD and that the number of surface water systems and corresponding discharge varies greatly with annual precipitation, as well as climatic variability.

Past drought has resulted in the need to conduct emergency gathers in 2000 and 2004, due to lack of water and deteriorating body condition of wild horses. In 2012, the BLM initiated water hauling at McCullough Spring, and the Slough, in response to severe drought conditions. Additionally, a gas powered generator is used to fill a storage tank and troughs at the Brown Well.

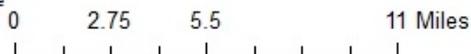


2012: Dry Lake. Top photo May 11. Bottom photo June 8.

Springs and Perennial Streams, Fish Creek HMA



No Warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



The Davis Pipeline was inspected and maintained to ensure it was fully functioning and delivering water to all of the five troughs on the system. Water inventory and inspection occurred at all known waters within the Fish Creek HMA, with the exception of Ninemile Peak. These waters are shown on Map 3.

Drought monitoring has continued throughout the HMA since 2012. To further facilitate monitoring of wild horse use and body condition, trail cameras have been used at several of the water sources within the HMA, including the Slough, Brown Well and McCullough Spring. In 2013, 3,000 gallon storage tanks were set at the Slough and McCullough Spring to provide water to troughs at those locations. Water hauling continued through 2014. The following photos display some of the water sources within the Fish Creek HMA 2010 through 2014.



2012: The Slough. Top photo June 18. Bottom photo August 10. Troughs were placed and water hauling initiated in early July. BLM Nevada Wild Horse and Burro Specialist Alan Shepherd and Mount Lewis Field Office Assistant Field Manager, Renewable Resources Mike Vermeys discuss options for hauling water to wild horses.



2012: Dave Keene Spring. Top photo May 17. Bottom photo July 19.



2012 McCullough Spring. Top photos May 8. Bottom photos June 8.



2013 McCullough Spring. Left July 22, right August 22.



The Slough, July 22, 2013.



Dry Lake Pond June 10, 2014. The pond was still full as of July 3.



Dave Keene Spring June 10, 2014



McCullough Spring June 10, 2014





The Slough, 2014: Top June 10, middle June 29, bottom December 4.

Riparian Proper Functioning Condition (PFC) Assessments have not been conducted on the riparian areas within the Fish Creek HMA since completion of the Fish Creek Complex Rangeland Health Evaluation in 2004. Refer to the documents in Section 1.4 for more information about the condition of riparian areas in this area.

Environmental Consequences

Proposed Action

The proposed wild horse gather would not have any direct impacts to riparian-wetland zones or water quality within the Fish Creek HMA.

In most cases, wild horses visit water sources briefly. The exception may include large open springs or meadow complexes. High wild horse population and density of animals in relation to limited water sources may result in degradation of water sources. Maintaining the wild horse populations within the established AML range and promoting a thriving natural ecological balance within the HMA would offer the best opportunity to improve riparian resources that have historically been heavily used by wild horses, and which have suffered the impacts of severe drought.

Achievement of AML would ensure that wild horse populations are in balance with the forage and water availability, providing for optimal dispersion of wild horses. As the population growth rates are reduced, and the population declines, indirect impacts would include less concentrated use in the regions near critical water sources. Over time there would be 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 overall improvement in the quantity and quality of these areas for use by wildlife, 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.

Impacts that differ among Action Alternatives

Differences in the indirect impacts to riparian wetland zones and water quality would be related to wild horse population size. The Proposed Action, Alternatives 1 and 3 have the potential to see the population achieve the AML within 10 years should adequate removals of excess wild horses occur in combination with PGS (Proposed Action and Alternative 3). Alternative 2 would likely not see the

achievement of the AML within 10 years, and excess wild horses would continue to negatively affect rangeland health. Alternative 3, with repeated removals of excess wild horses and the implementation of fertility control could see the AML achieved the soonest, and maintained thereafter. Implementing the Proposed Action, Alternative 1 or 3 would decrease competition for water sources and alleviate pressures exerted on riparian habitat due to wild horses congregating around these sensitive areas. Refer to the Population Modeling discussion in Section 3.2 and Appendix E for more information about the potential population size, growth rates, and gather and removal numbers for each Alternative.

No Action Alternative (No Wild Horse Gather)

Wild horse population size would continue to increase in excess of the established AML. According to population modeling analysis, the average population over 10 years could exceed 1,800 wild horses. Emergency removals would be required as the population exceeds the ability to be supported by the available waters. Use of riparian areas by this level of wild horses would have obvious consequences to the condition of riparian resources within the HMA, and resulting quality of riparian habitat for wildlife. Downward trends would result from heavy utilization of riparian vegetation and browse, and trampling by wild horses. Riparian areas rated below PFC (Functional at Risk and Non-Functional) would not improve, and downward trends could continue.

Water quality throughout the HMA would continue to be affected by high populations of wild horses using the limited water sources throughout the area.

3.7. Threatened & Endangered Species, Special Status Species, Migratory Birds and Wildlife

Affected Environment

The BLM manages the habitat for which wildlife species depend on public lands. The NDOW manages the wildlife throughout the state. BLM and NDOW work together to monitor wildlife, wildlife habitat, plan restoration or enhancement activities and coordinate on management activities. The BLM does not manage the wildlife of Nevada, nor does the BLM manage any predator control programs.

The Endangered Species Act (ESA) of 1973 requires BLM to analyze the impacts of all proposed activities on Proposed, Threatened, or Endangered species. Currently, the Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is the only known federally listed species that may occur in the Fish Creek HMA. Populations of some species throughout Fish Creek HMA are declining and warrant special management actions to insure population viability. One species that occurs within the range, the greater sage-grouse (*Centrocercus urophasianus*), is listed as a candidate for federal listing as a threatened or endangered species by the United States Fish and Wildlife Service (USFWS). In addition to greater sage-grouse, the Nevada BLM has listed several other species (see IM-NV-2011-059-1) whose populations are considered to be at risk and warrant attention. BLM special status species that occur or may occur in the Fish Creek HMA are listed in Appendix H.

The Fish Creek HMA, which includes the Fish Creek Mountain Range, Antelope Valley and Little Smoky Valley, supports fauna characteristic of the northern Great Basin within sagebrush steppe, pinyon-juniper woodlands, cottonwood and aspen groves, and mountain shrub habitat types. Large mammals in the Fish Creek HMA include mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), elk (*Cervus canadensis*) and mountain lion (*Felis concolor*). For mule deer, pockets of bitterbrush (*Purshia tridentata*) and other shrubs are particularly important for overwinter survival. Elk

have been observed throughout the Fish Creek Mountain Range. Other wide-ranging mammals include coyote (*Canis latrans*), bobcat (*Lynx rufus*), badger (*Taxidea taxus*), pygmy rabbit (*Brachylagus idahoensis*), black-tailed jackrabbit (*Lepus californicus*), long-tailed weasel (*Mustela fretala*) and a variety of rodent species. Several bat species listed as BLM special status species (see Appendix H) are also likely to occur in the mountains. Other animal species within the Fish Creek HMA include lizards, snakes, a few amphibians, and a diversity of insects.



2007 Monitoring, Sage-grouse, June 11, 200, located south of the Fish Creek HMA on private land.

Birds in the Fish Creek HMA include raptors, upland gamebirds, woodpeckers, hummingbirds, and several species of passerines. The most ubiquitous nesting raptors in the range are golden eagles (*Aquila chrysaetos*), red-tailed hawks (*Buteo jamaicensis*), and American kestrels (*Falco sparverius*). Ferruginous hawks (*Buteo regalis*) and prairie falcons (*Falco mexicanus*) also nest throughout the range, and aspen stands support nesting cooper's hawks (*Accipiter cooperii*), sharp-shinned hawks (*Accipiter striatus*) and potentially northern goshawks (*Accipiter gentilis*).

greater sage-grouse are the primary upland game-birds in the range. Greater sage-grouse use large portions of the Fish Creeks throughout the year. Habitat requirements for greater sage-grouse typically include low and high-elevation sites that are dominated by sagebrush. Oftentimes, greater sage-grouse use low- to mid-elevation sagebrush for breeding (i.e., strutting grounds or leks), nesting and early brood-rearing, but move to higher elevations and riparian areas for late brood-rearing. Greater sage-grouse use sagebrush for cover and food throughout the year, but also require an herbaceous understory to provide nest concealment, as well as provide a diet of forbs and insects for adults and their chicks.

Chukar (*Alectoris chukar*), gray partridge (*Perdix perdix*), dusky grouse (*Dendragopus obscurus*) and

Portions of the Fish Creek Mountains and surrounding valleys are considered to be critical habitat for greater sage-grouse with several known leks in the area. Population declines are likely principally related to reductions in the availability and degraded condition of lowland breeding habitat. However, changes in the condition of valuable brood-rearing habitat on meadows, springs and other riparian habitat that occur on the range may also be a factor in the declining populations here.

Generally, risks to greater sage-grouse throughout their range include:

- the loss of sagebrush habitat due to wildfire
- reduction in brood-rearing habitat due to channelization of stream channels
- down-cutting and drying of meadows
- reduction in size of spring and seep sites due to the removal of vegetative cover by ungulates
- reduction of native perennial grasses and forbs necessary for nesting cover
- reduction of native forbs which provide insects and other sources of protein for pre-egg laying and chick development
- pinyon-juniper encroachment into sagebrush habitat
- human disturbance

Greater Sage-Grouse Interim Management Policies and Procedures, (BLM IM 2012-043) directs the BLM to implement conservation strategies for the protection of greater sage-grouse including minimizing habitat loss, maintaining and restoring habitat, and implementation of management actions to improve degraded habitat. The policy also directs the BLM to prioritize removal of excess wild horses from HMA's and to manage wild horse HMA's within the established AML's.

Wild horses can compete with wildlife species for forage as dietary overlap occurs to varying degrees depending upon species and their preferred forage (grasses, forbs or shrubs), time of year and the nutritional needs of the animal. As a result, overpopulation of wild horses, heavy utilization levels or degradation of rangeland can cause important forage components for wildlife species to become limiting. Degraded rangelands typically produce substantially reduced levels of grasses and forbs important to many wildlife species.

According to the United States Drought Monitor, the state of Nevada is entering the fourth consecutive year of severe drought. Drought is a significant factor for reduced plant growth and rangeland degradation. In 2014, drought monitoring was conducted and found that primary forage species exhibited reduced production in many locations throughout the Fish Creek HMA.

Competition for water sources also exists, particularly where waters are limited or during drought years when existing sources do not produce normally or go dry. Horses have been found to have some effect on the frequency of use of a water source by other wildlife in arid environments. One study found that in areas where bighorn sheep and horse water sources overlapped, higher the frequency of horse use led to lower frequency of bighorn sheep use, and vice versa (Ostermann-Kelm et al. 2008). The presence of wild horses at water sources is believed to deter the use of that water by pronghorn antelope until the horses leave the area. However, two water haul locations in addition to a pumped well and a five-trough pipeline has been operated within the Fish Creek HMA since 2012 to provide water to wild horses during drought. Game cameras utilized at the water haul locations show frequent use by pronghorn with documented elk and mule deer at the McCullough Springs location. These additional water sources have benefited both horses and wildlife within this HMA.



Trail camera photo of young elk taken at a water hauling location in the Fish Creek HMA, August 2012.

Environmental Consequences

Impacts Common to Helicopter Gather Alternatives

The gathering of wild horses using helicopter is included within the Proposed Action, Alternative 1 and Alternative 3. Direct impacts to wildlife are expected to be minimal and short term in nature. Most notably, wildlife present in or near trap sites or holding facilities would be temporarily displaced. However, when possible, gather sites would be located in areas that have previously been disturbed (i.e. gravel pits) and would likely contain very little vegetation. If necessary, potential gather sites would also be inventoried to determine the presence of sensitive species and they would be avoided if observations indicate use.

If wild horse gathers occur during fall or winter (i.e., prior to March 1), negative impacts to birds, reptiles and amphibians would be minimal because birds typically do not begin nesting during this time and reptiles and amphibians are inactive. If the action occurs during the avian nesting season (March 1 through July 31), a qualified biologist would conduct a survey to determine the presence of nesting birds near the gather site, and a protective buffer zone surrounding each nest would be established until the young birds are fledged. This approach would be used because any ground clearing for traps and holding facilities, or other vegetation-disturbing action during the migratory bird nesting season risks a violation of the Migratory Bird Treaty Act by destroying bird eggs or young. Gather sites would also be located > 2 miles from any known active lek sites if greater sage-grouse could be present. Direct impacts to greater sage-grouse are not anticipated because helicopter operations would normally be completed during winter months and would not interfere with greater sage-grouse strutting/lekking, nesting or brood rearing activities. Refer to the SOPs in Appendix A for additional measures that would be implemented to reduce impacts to wildlife species.

Impacts Common to Bait and Water Trapping Alternatives

For the use of water trapping, portable corrals are placed around water sources for eventual capture of wild horses when they come to the water to drink. Water or bait trapping could occur year round. Through the use of water trapping, it is possible that non-target species such as deer, pronghorn or elk could be captured. Non-target animals would be released immediately. However, these animals would be stressed by the experience and could be injured or killed.

In order to facilitate water trapping, existing water sources besides the target water may be excluded for use by constructing panels around the source, thereby forcing wild horses to utilize the target source. This would also affect pronghorn, mule deer and elk, forcing them to utilize water sources which they may not normally have used. These disturbances would exist through the duration of water trapping activities. The BLM would coordinate with NDOW when planning for water or bait trapping activities in order to minimize impacts to wildlife and increase success of the wild horse capture.

Indirect Impacts Common to Action Alternatives

Reducing wild horse population size achieving the established AML would have long-term indirect benefits to several wildlife species via 1) reduced competition for important forage species, 2) reduced competition for water, and 3) increased understory vegetation cover. Since 2012, forage has become substantially limited due to drought and heavy use by wild horses and livestock throughout the Fish Creek HMA. Removing 200 excess wild horses in 2015 under the Proposed Action, Alternative 1 or 3 would preserve some of the remaining forage for wildlife use during the 2015 winter and spring.

Managing wild horse populations within the established AML would ensure that unacceptable levels of competition with wildlife species do not occur since a thriving natural ecological balance would be maintained. Improved trends in rangeland health equate to increased quality and quantity of habitat available for both wild horses and wildlife and allow for healthier animals, especially in times of drought or harsh winters when resources are most limited. Management of the populations within the established AML would also be consistent with BLM IM 2012-043 and promote improvement of degraded habitat important for greater sage-grouse, as well as reducing risk factors.

Impacts that differ among Alternatives

Indirect impacts to wildlife are inversely proportionate to the size of the wild horse population. According to the population modeling, the Alternative 3 would result in the lowest overall average

population size which would provide the most increase in forage and water resources available to wildlife in comparison with the other alternatives. However the Proposed Action and Alternative 1 have the potential to achieve the AML if sufficient excess wild horses are removed in future gathers and if the fertility control program is successful under the Proposed Action. The sooner that AML could be achieved the sooner other benefits would be received by wildlife (including greater sage-grouse) and would include increased grass and shrub cover which provides more nesting and foraging habitat. Reductions in wild horse populations via removal and fertility treatments are thought to be an important mechanism to prevent excessive degradation of greater sage-grouse habitat (Beever and Aldridge 2011).

Reducing population growth rates and achieving and maintaining the AML through multiple gather methods and the implementation of fertility control under the Proposed Action provides the best opportunity for conservation, protection, and preservation of identified species and their habitats. Alternative 2 would not likely achieve the AML over the course of the next 10 years, and though no helicopter gathers would occur (that might disturb wildlife), wild horses in excess of the established AML would continue to compete with wildlife for forage and water, and impact upland and riparian resources. According to the population modelling, Alternative 1 and 3 could achieve AML more quickly when compared to the Proposed Action, through increased gather operations and removals. Refer to the Population Modelling discussion in Section 3.2 and additional detail in Appendix E.

No Action Alternative

The existing population of wild horses is currently estimated to be 323% of the AML established for the HMA, and wild horses are utilizing forage and resources beyond what they have been allocated through LUP/RMP and FMUDs. As a result, competition with wildlife species has increased substantially and habitat health, forage and water availability is being impacted, particularly during 2014, which have endured severe and extreme drought conditions. Through the analysis of potential population increases through the WinEquus population model, it was determined that average population size could exceed 1,800 wild horses over the next 10 years if no gather occurs. Excessive populations of this magnitude would have extreme negative impacts to wildlife and wildlife habitat through severe degradation of habitat, loss of perennial key forage species, loss of riparian systems and destruction of cover and nesting habitat. Given current monitoring data, degradation could be irreversible in some areas if the population isn't reduced to levels consistent with the AML which would restore a thriving natural ecological balance. Decline of wildlife species would be congruent upon the decline of habitat.

Wild horses are already impacting important habitat utilized by greater sage-grouse, in addition to riparian areas, aspen communities, and meadow complexes valuable to many species of wildlife. If the No Action alternative was selected, increasing wild horse populations could severely increase greater sage-grouse vulnerability to predation, disease and elevated stress levels, ultimately affecting aspects of fitness and survival (Beever and Aldridge 2011). In the Fish Creek HMA, implications of further reductions in the integrity of sagebrush communities are potentially severe, and would likely contribute to continued declines in greater sage-grouse populations here. The No Action Alternative would not afford protection of important greater sage-grouse habitat and would allow for further degradation of uplands and riparian areas by an overpopulation of wild horses. The habitat degradation would continue to deteriorate the longer the period is to a gather and removal of excess wild horses. The No Action Alternative would not adhere to IM 2012-043.

3.8 Health and Safety

In recent gathers, members of the public have increasingly traveled to the public lands to observe BLM's helicopter gather operations. Members of the public can inadvertently wander into areas that put

them in the path of wild horses that are being herded or handled during the gather operations, creating 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 in time to avoid members of the public in their path. 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.

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.

The public would not be allowed to view the actual trapping activities during bait or water trapping, as described in Section 2.3. Safe viewing areas would be identified for the public to view loading, sorting and fertility control treatment.

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.

Public observation of the helicopter gather activities on public lands will be allowed and would be consistent with BLM IM No. 2010-164 and visitation protocols for scheduled and non-schedule visitation in Appendix F.

Environmental Consequences

Proposed Action

Public safety as well as that of the BLM and contractor staff is always a concern during the gather operations and would be addressed through Observation Protocols that have been used in recent gathers to ensure that the public remains at a safe distance and does not get in the way of gather operations, and by the presence of law enforcement officers at the site. These measures minimize the risks to the health and safety of the public, BLM staff and contractors, and to the wild horses themselves during the gather operations.

No Action Alternative

There would be no gather related safety concerns for BLM employees, contractors and the general public as no gather activities would occur at this time.

3.9. Wild Horse Gather Mitigation Measures

This EA has analyzed the potential impacts that could occur with completion of gathers using helicopter and bait or water trapping to remove excess wild horses and apply fertility treatment to released mares. The following section applies primarily to helicopter gathers and summarizes the measures developed to ensure that 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, and the BLMs CAWP IM 2013-059 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 wellbeing 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 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, or other qualified volunteer or organization in the case of darting.

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 so as to move the horses into the large holding pens where they can 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 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 (IM 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 wellbeing 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 reduce 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 near 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.

Observation Protocols would be implemented to ensure the safety of the public, BLM employees and contractors and the wild horses while members of the public are in the area to observe the gather operations. These protocols are detailed in Appendix F.

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 effects study area (CESA) for the purposes of evaluating cumulative impacts is the Fish Creek HMA.

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.

Resources that could be impacted cumulatively by the Proposed Action, Alternatives (including the No Action Alternative), and future actions include the following:

Livestock Management
Vegetation and Soils
Wild Horse Populations
Wildlife, and Sensitive Species
Water and Riparian Resources

For purposes of this analysis, potentially affected resources are discussed below in terms of past, present and reasonably foreseeable future actions which have or would have an effect in conjunction with the Proposed Action, Alternatives and No Action Alternative. These effects may be beneficial or negative, and differ among the Alternatives including the No Action Alternative.

4.1. Past, Present, and Reasonably Foreseeable Actions

Past Actions

Past actions, which have affected these resources within the CESA, primarily include livestock grazing and wild horse use. Other actions have included mining, mining exploration, and woodcutting. These actions are currently ongoing.

Management of the public lands and authorized uses were determined within the RMPs and amendments completed by each District in conjunction with input from the interested public. The Northeastern Great Basin RAC developed standards and guidelines for rangeland health that have been the basis for assessing rangeland health in relation to management of wild horse and livestock grazing within the BLM Districts. Adjustments in numbers, season of use, grazing season, and allowable use have been based on the evaluation of progress made toward reaching the standards and RMP objectives.

Historical mining activities have occurred throughout the CESA, and have primarily been small in scale. Substantial historic and current mining activity exists on the northern boundary of the HMA around the town of Eureka. These areas are seldom used by wild horses.

Domestic livestock have been present in the Fish Creek HMA, regulation of which resulted from the Taylor Grazing Act (TGA) of 1934, Federal Land Policy and Management Act (FLPMA) of 1976 and Public Range Improvement Act (PRIA) of 1978 as well as other laws, regulations and policies. Livestock grazing is also authorized in RMPs.

A series of livestock grazing decisions since the TGA have resulted in reductions in livestock numbers and changes in seasons of use and in grazing management practices to promote rangeland health within grazing allotments. The most current livestock management changes were implemented through the FMUDs issued in 2004 following completion of the Fish Creek Complex Rangeland Health Evaluation.

In 1971 Congress passed the WFRHBA which placed wild and free-roaming horses and burros, that were not claimed for individual ownership, under the protection of the Secretaries of Interior and Agriculture. In 1976 FLPMA gave the Secretary the authority to use motorized equipment in the capture of wild free-roaming horses as well as continued authority to inventory the public lands. PRIA



Fish Creek HMA September 17, 2014. This area is a winterfat site. In the top left corner a winter fat exlosure is depicting potential of ungrazed winterfat. This area is heavily used by wild horses as it is near the end trough of Davis Pipeline. This area also reflects impacts from Severe and Extreme drought experienced since 2012.

amended the WFRHBA to provide additional directives for BLM’s management of wild free-roaming horses on public lands.

Past actions also include establishment of wild horse HMAs, establishment of AML for wild horses, and wild horse gathers. Some activities have increased infestations of invasive plants, noxious weeds, and pests and their associated treatments. Activities have also increased human disturbance of wild horses, contributed to habitat fragmentation and changes to plant communities as a result of disturbance or utilization of key forage species.

Wild horses have existed within the Fish Creek HMA since prior to the passage of the 1971 WFRHBA. The Herd Area was established based on the presence of wild horses within this area in 1971, and later designated as an HMA in the 1986 SERA RMP ROD. The Fish Creek HMA boundary is nearly identical to the Fish Creek Herd Area boundary with the exception of the portion of the HMA north of U.S. Highway 50.

Wild horse management has occurred in the Fish Creek HMA since 1980. Eight gathers have been completed in the past on part or all of the HMA, with the last two larger gathers in 1994 and 2000. In 2000 and 2004, 600 and 55 wild horses respectively were removed from the Fish Creek HMA due to lack of resources due to drought. The following table displays the gathers that have occurred and the removal of wild horses through the years. The figures do not reflect wild horses uncaptured, or post gather population estimates.

Table 28: Fish Creek Complex Gather History

HMA	Year	Total Capture	Released Back to HMA	Removed from HMA
Fish Creek	1980	413	0	413
	1986	99	0	99
	1987	303	0	303
	1994	889	246	643
	1998	622	144	478
	2000	600	0	600
	2004	55	0	55
	2005	200	34	165
	2006	131	17	114

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 HMAs. During the January 1998 gather of the Fish Creek HMA, fertility control vaccine (PZP) was administered to all (52) mares 10 years and older released back onto the HMA. The vaccine was a 1-year formulation, and would have prevented pregnancy of these mares in 1999. 13 mares under 10 years of age were also given the drug and released, for a total of 65 mares treated. A follow up flight indicated that the drug was 90% effective. The drug was only effective for one year.

Present and Future Actions

Current actions, which have affected the resources within the CESA, primarily include mining exploration, livestock grazing and wild horse use.

Future activities which could be expected to contribute to the cumulative impacts of implementing the Proposed Action or Alternatives within the next 10 years include continued mining exploration and

development, oil and gas leasing, power line construction, solar, wind or other “green” energy production, livestock adjustments, treatment of invasive plants, noxious weeds, and pests, wild horse AML adjustments, wild horse population growth suppression, modification of wild horse sex ratios, herd augmentation, and wild horse removals.

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.

Though authorized by the WFRHBA, current appropriations and policy prohibit the destruction of healthy animals that are removed or deemed to be excess. Only sick, lame, or dangerous animals can be euthanized, and destruction is no longer used as a population control method. A recent amendment to the WFRHBA allows the sale of excess wild horses that are over 10 years in age or have been offered unsuccessfully for adoption three times. BLM is adding additional long-term grassland pastures in the Midwest and West to care for excess wild horses for which there is no adoption or sale demand.

The focus of wild horse management has also expanded to place more emphasis on achieving rangeland health as measured against the RAC Standards. The Northeastern Great Basin RAC standards and guidelines for rangeland health are the current basis for assessing rangeland health in relation to management of wild horse and livestock grazing. Program emphasis has also shifted to controlling population growth rates using fertility control in order to reduce the need for removal and holding of wild horses off the range for which an adoption demand doesn’t exist.



Antelope Valley in the Fish Creek HMA, view from helicopter taken during flight of Fish Creek HMA on September 17, 2014.

The current Fish Creek HMA population is estimated to be 549 wild horses. Resource damage is occurring in portions of the Fish Creek HMA due to excess animals. 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. The current overpopulation of wild horses is contributing to heavy use of vegetation communities, and trailing, especially in light of Severe and Extreme drought conditions experienced since 2012.

Over the next 10-20 year period, reasonably foreseeable future actions that could cumulatively affect wild horses include treatment with PGS (fertility control) formulations that would reduce population growth and allow AML to be maintained with reduced necessity for gathers. Through successful PGS, the number of excess wild horses that need to be removed from the range to maintain a Thriving Natural Ecological Balance could be reduced. It is possible that forms of sterilization of mares or studs could be implemented to keep a portion of the population from reproducing without needing annual or periodic treatment with a fertility control drug.

Future gathers could be conducted by helicopter or through bait or water trapping. These gathers could continue as needed to continue to implement PGS (if indicated) and/or remove excess horses from the range. A Herd Management Area Plan (HMAP) could also be completed which would establish additional short and long-term management and monitoring objectives for the HMAs and their habitat. Future improvements in habitat could result in increases to AMLs in any or all of these HMAs. The Fish Creek HMA wild horses could also be involved in future Research projects for fertility control, animal tracking, and vegetation studies.

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 LTPs.

In the future, the BLM would manage wild horses within HMAs that have suitable habitat for an AML range that maintains genetic diversity, age structure, and targeted sex ratios. Current policy is to express all future wild horse AMLs as a range, to allow for regular population growth, as well as better management of populations rather than individual HMAs. The BMD is in the process of revising the Tonopah and SERA LUPs. The revised Plan could influence the management of wild horses within the District in the future pertaining to HMAPs, gathers, population control, allocation of use to wild horses, burros, livestock and wildlife, monitoring and setting and adjusting AMLs.



Fish Creek HMA horses May, 2012.

The BLM would continue to conduct monitoring to assess progress toward meeting rangeland health standards and RMP objectives. Wild horses would continue to be a component of the public lands in the Fish Creek HMA, managed within a multiple use concept.

While there is no anticipation for amendments to the WFRHBA, any amendments may change the management of wild horses 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.

4.2. Cumulative Impacts Summary

Impacts Common to the Proposed Action Alternative

As the BLM achieves AML on a national basis, gathers should become more predictable due to facility space. PGS should also become more readily available as a management tool, with treatments that last between gather cycles reducing the need to remove as many wild horses and possibly extending the time between gathers (or reduce the need for gathers all together). The combination of these factors should result in an increase in stability in management of wild horses on the range.

A program to implement population growth suppression with periodic gathers 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. Negligible numbers of animals would have to be put in long term pastures 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 improvements to animal health could result. In past years, the gather frequency in the BMD has averaged 7-8 years with populations increasing to many times the AML, followed by gathers that required the removal of a large portion of the population to reach AML given the high population growth rate and length of time between gathers. A program to implement population growth suppression would result in the *release* of most of the animals gathered (after application of fertility treatment to mares), removal of primarily young animals, and would maintain stable populations within the established AML range, avoiding the cycle of over populated ranges, necessitating the gather and removal of large numbers of excess animals in order to achieve the lower limit of AML.

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.

By bringing the wild horse populations to AML, it would be possible to gather a higher percentage of the total population in future gathers, which would allow the increased use of fertility control and sex ratio adjustments as methods to slow population growth.

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



Fish Creek HMA, September 17, 2014 helicopter resource flight view of high mountain use areas by wild horses.

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.

Cumulative effects which would be expected when incrementally adding the Proposed Action Alternative to the CESA would include continued improvement of vegetation condition (i.e. forage availability and quantity), which in turn would result in improved vegetation density, cover, vigor, seed production, seedling establishment and forage production over current conditions. Managing wild horse populations within the established AML would allow the primary forage plant species to return more rapidly and allow for improvements to riparian habitat, even though some vegetation conditions may never be able to return to their potential. Upward trends would benefit permitted livestock, native wildlife, and wild horse population as forage (habitat) quality and quantity is improved over the current level. Maintaining AML over a sustained period of time throughout the CESA would allow for the collection of scientific data to evaluate whether changes to AML levels are warranted or necessary.

Impacts of that differ among Action Alternatives

Cumulative impacts that differ among the Action Alternatives concern vegetation and soil disturbance from gathers, long term impacts to rangeland health and wild horse health and numbers treated and removed from the range.

The Proposed Action, Alternative 1 and 3 include the use of helicopter to gather wild horses initially in 2015. Regular helicopter gathers would occur under Alternative 1 and 3, and periodically as needed under the Proposed Action. No helicopter gather would be included under the Alternative 2. The magnitude and frequency of helicopter gathers would vary and be the greatest under Alternative 1 and 3, moderate under the Proposed Action and the smallest under Alternative 2. This would have proportional effects to the population's social structure.

No removals would be planned under Alternative 2, with the fewest removals expected under the Proposed Action. This could benefit the genetic health of the population over time, and prevent any bottleneck effect. None of the Action Alternatives would be expected to have long term or cumulative impacts to wild horses.

Through all Alternatives, wild horses would be gathered. Bait and water trapping would be less intrusive and would be implemented under the Proposed Action, Alternative 2 and to a much lesser degree under Alternative 1 or 3.

Under Alternative 3, gathers to implement fertility control every 3 years, would have the effect of reducing the gather efficiency as wild horses learn to avoid the helicopter. Though horses would be disturbed every 2-3 years, most horses would be re-released back to the range resulting in fewer disturbances to existing social structures.

The Proposed Action, Alternative 1 and 3 all have the potential to achieve the AML within the next 10 years, depending on the removal of excess wild horses in future gather activities. Consequently, cumulative negative impacts to wildlife, soils, and vegetation from gathers would be minimized, whereas long term cumulative benefits in the way of improved habitat quality and quantity would be enjoyed by all rangeland users.

Impacts from No Gather Alternative

Increased movement of horses outside the boundaries of the HMA could be expected as the ever greater numbers of wild horses search for sufficient resources and habitat for survival, thus impacting larger areas of public lands within the CESA. Heavy utilization of available forage and insufficient water to meet the needs of the over-population of wild horses would be expected. Allowing the wild horse

population to continue to grow beyond the current population numbers would be likely to result in a population crash in less than 1-3 years. Wild horses, wildlife and livestock would not have sufficient forage or water. Ecological communities and habitat resources would be over-extended. Rangeland health would further degrade, possibly below biological thresholds, making recovery unlikely if not impossible as cheatgrass, medusa head, and other invasive non-native species dominate the understory, degrading ecological conditions.

Cumulative impacts under the No Action Alternative include the foregone opportunity to improve rangeland health and to properly manage wild horses in balance with the available water and forage. Over-utilization of vegetation and other habitat resources would occur as wild horse populations continued to increase. Improvements that have resulted from or could continue to be generated from reductions in livestock use, changes in season of use, and other management changes would be negated by the damaging effects of a significant overpopulation of wild horses.

Cumulative and chronic loss of habitat quality would impair the wild horse populations' ability to remain healthy and viable in the long-term. Although wild horse populations would be expected to eventually crash at some ecological threshold; wildlife would also experience suffering and possible death as rangeland resources are consumed and severely degraded. The RMP/FMUD objectives and Standards for Rangeland Health and Wild Horse and Burro Populations would not be achieved.

Because AML would continue to be exceeded throughout the CESA, monitoring data would reflect impacts from an over-population of wild horses and would not allow BLM to evaluate whether AML levels can (or should be) further modified.

Current impacts to the human environment across the CESA would be compounded should the current population of wild horses be allowed to remain and expand since rangeland resources would continue to be over-used and would not have the opportunity to recover from the impacts of excess numbers of wild horses. Irreparable damage to the arid habitat could preclude the ranges ability to support a viable wild horse population. Future actions could involve permanent remove of all wild horses from the Fish Creek HMA, or to reduce AMLs in future decisions due to lack of suitable habitat features. Similarly, permitted livestock would be reduced or possibly eliminated in certain areas due to lack of forage. Wildlife numbers would also fall, as habitat quality drops below levels needed to support them.

Impacts Conclusion

Past actions regarding the management of wild horses have resulted in the current wild horse population within the Fish Creek HMA. Wild horse management has contributed to the present resource condition and wild horse herd structure within the gather area.

The combination of the past, present, and reasonably foreseeable future actions, along with the Proposed Action or Alternatives, should result in more stable and healthier wild horse populations, healthier rangelands (vegetation, riparian areas and wildlife habitat), and fewer multiple-use conflicts within the Fish Creek HMA.

The proposed gather area contains a variety of resources and supports a variety of uses. Any alternative course of wild horse management has the opportunity to affect and be affected by other authorized activities ongoing in and adjacent to the area. The significance of cumulative effects based on past, present, proposed, and reasonably foreseeable future actions are determined based on context and intensity.

5. 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). Under the Proposed Action or Alternative 2, additional freemarking of released wild horses, particularly mares would be implemented to facilitate documentation of movement and behavior patterns. Trail cameras would supplement field monitoring data and be analyzed to enable an efficient and effective booster treatment strategy. Treatment records would be maintained for all treated mares as well as other information as it becomes available through the continued monitoring efforts.

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. List of Preparers

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

Shawna Richardson	Project Lead/Wild Horse and Burro Specialist
Shiva Achet	Planning and Environmental Coordinator
Dustin Fowler	Rangeland Management Specialist
Juan Martinez	Native American Coordinator
Alden Shallcross	Hydrologist
Michelle Fast	Great Basin Institute Riparian Monitoring
Kent Bloomer	Noxious and Invasive Species Specialist
Jason Spence	Rangeland Management Specialist
Victoria Sanderson	Great Basin Institute Rangeland Monitoring
William O'Neill	Wildlife Biologist

7. Consultation and Coordination

Public hearings are held annually on a state-wide basis regarding the use of motorized vehicles, including helicopters and fixed-wing aircraft, in the management of 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 the motorized vehicles. The Winnemucca District Office hosted the Nevada state-wide meeting on June 18, 2014; no changes to the current gather operation SOPs were identified based on the concerns expressed.

8. Public Involvement

This Preliminary EA will be posted on the Fish Creek HMA gather website and the National NEPA register. Notification of its availability will be sent to the Interested Public mailing list (50+ individuals and organizations), and the Native American Consultation mailing list. The Preliminary EA will be available for 30 day comment period. Comments received would be reviewed and edits made to the Final EA. As discussed in Section 2.3.6 and 3.8 and Appendix F, viewing opportunities would be made available to the public, and information posted on the Fish Creek HMA gather website throughout the gather activities.

9. List of References

- Beever, E.A. and C.L. Aldridge. 2011. Influences of free-roaming equids on sagebrush ecosystems, with a focus on Greater Sage-Grouse. Pp. 273-290 in S.T. Knick and J.W. Connelly (editors). Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38). University of California Press, Berkeley, CA.
- Coates-Markle, L. 2000. Summary Recommendations, BLM Wild Horse and Burro Population Viability Forum April 1999, Ft. Collins, CO. Resource Notes 35:4pp.
- Curtis, P.D., Pooler, R.L., Richmond, M.E., Miller, L.A., Mattfield, G.F., Quimby, F.W. 2002. Comparative effects of GnRH and porcine zona pellucida (PZP) immunocontraception vaccines for controlling reproduction in white-tailed deer (*Odocoileus virginianus*). Reproduction Supplement 60:131–141.
- Bartholow, J. M. 2007. Economic Benefit of Fertility Control in Wild Horse Populations. Journal of Wildlife Management 71 (8) 2811-2819.
- Garrott, R. A., and L. Taylor. 1990. Dynamics of a feral horse population in Montana. Journal of Wildlife Management 54:603-612.
- Heilmann, T.J., Garrott, R.A., Caldwell, L.L., Tiller, B.L. 1998. Behavioral response of free-ranging elk treated with an immunocontraceptive vaccine. Journal of Wildlife Management 62:243–250.
- HSUS, 2010. Letter to BLM, signed by Stephanie Boyles, Wildlife Scientist with the HSUS transmitting comments to the BLM on the BLM Wild Horse and Burro Strategy Document. www.humanesociety.org/assets/wild_horse_burro_manage_HSUS_comments_090310.pdf.
- Hazard, H. 2010. Personal communication, Holly Hazard, Chief Innovations Officer HSUS October 2010.
- Kirkpatrick, J.F. 1995. Management of Wild Horses by Fertility Control: The Assateague Experience. National Park Service Scientific Monograph, National Park Service, Denver, CO. (60 pp.).
- Kirkpatrick JF, Turner A. 2002. Reversibility of action and safety during pregnancy of immunization against porcine zona pellucida in wild mares (*Equus caballus*). Reprod Suppl. 60:197-202.
- Kirkpatrick, J.F., and A. Turner. 2003. Absence of effects from immunocontraception on seasonal birth patterns and foal survival among barrier island horses. Journal of Applied Animal Welfare Science 6: 301-308.
- Kirkpatrick, J.F., Rutberg, A.T., Coates-Markle, L. 2010. Immunocontraceptive Reproductive Control Utilizing Porcine Zona Pellucida (PZP) in Federal Wild Horse Populations (Third Edition). The Science and Conservation Center, ZooMontana, Billings Montana. http://www.zoomontana.org/wp-content/uploads/pzp_q_and_a.pdf
- Madosky, J.M., Rubenstein, D.I., Howard, J.J., Stuska, S. In press. The effects of immunocontraception on harem fidelity in a feral horse (*Equus caballus*) population. Applied Animal Behaviour Science.
- Nunez, C.M.V., Adelman, J.S., Mason, C., Rubenstein, D.I. 2009. Immunocontraception decreases group fidelity in a feral horse population during the non-breeding season. Applied Animal Behaviour Science 117:74–83.
- Ostermann-Kelm, S. D., E. A. Atwouid, E. S. Rubin, L. E. Hendrickson, and W. M. Boyce. 2009. Impacts of feral horses on a desert environment. BMC Ecology 9:22.

- Powell, D.M. 1999. Preliminary evaluation of porcine zona pellucida (PZP) immunocontraception for behavioral effects in feral horses (*Equus caballus*). *Journal of Applied Animal Welfare Science* 2:321–335.
- Ransom, J.I., Cade, B.S., Hobbs, N.T. 2010. Influences of immunocontraception on time budgets, social behavior, and body condition in feral horses. *Applied Animal Behaviour Science* 124:51–60.
- Shumake, S.A., Wilhelm, E.S. 1995. Comparisons of effects of four immunocontraceptive treatments on estrous cycle and rutting behavior in captive white-tailed deer. Denver Wildlife Research Center, Colorado, USA.
- 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. Liu, A.T. Rutberg, and J.F. Kirkpatrick 1996a. Immunocontraception limits foal production in free-roaming feral horses in Nevada. *Journal of Wildlife Management* 61:873-880.
- 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.
- Turner, A., Kirkpatrick, J.F. 2002. Effects of immunocontraception on population, longevity and body condition in wild mares (*Equus caballus*). *Reproduction Supplement* 60:187–195.
- United States Government Accountability Office. 2008. Report to the Chairman, Committee on Natural Resources, House of Representatives -- Bureau of Land Management: Effective Long-Term Options Needed to Manage Unadoptable Wild Horses. GAO-09-77.
- 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 (SOPs)

I. Gather Plan

The purpose of the gather plan is to outline the methods and procedures for conducting wild horse gather activities on public lands in the Fish Creek Complex.

A. Gather Area

The Proposed Gather Area includes the Fish Creek HMA and areas outside of HMA boundaries where wild horses reside. Refer to Map 1 and 2, which display the HMA, grazing allotments and the gather area.

B. Administration of the Contract /Gather Operations

The National Wild Horse and Burro Gather Contract would be used to conduct wild horse helicopter gathers. The existing Bait and Water trapping contract could be used for those activities, or they may be conducted by BLM staff. 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. The BLM is committed to the well-being and responsible care of wild horses and burros we manage. At all times, the care and treatment provided by the BLM and our contractors will be characterized by *compassion and concern* for the animal's well-being and welfare needs. BLM Wild Horse and Burro Specialists would be on site at all times during gather operations to ensure wild horse safety and humane treatment. Measures to reduce stress and injury and ensure the highest levels of safety are described throughout Section 2, 3.2, 3.9 and Appendix A.III and Appendix G.

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 8-10 gather corrals and 1-2 sets of central holding corrals would be necessary to complete the gathers. 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 E 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-site for the duration of helicopter gather operations 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 BLM 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

Helicopter Drive Trapping

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 animals calm, and water tanks are 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. Some horses could occasionally 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 the risk of injury 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 if it is a difficult to gather area) 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 BMD 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.

Bait and Water Trapping

If water or bait trapping is used, it may be conducted by BLM staff or one of the water/bait trapping contractors. Corrals built of panels would be constructed around natural or artificial water sources, allowing sufficient time (several weeks) for the wild horses in the area to become acclimated. If necessary, all other water sources may be made unavailable to wild horses in order to encourage them to use the water in the water trapping corrals. Trap corrals would be checked every day, which may be facilitated by the use of remote game cameras. Once in the corrals, the BLM or contractor would load the animals for transportation to a central holding area or transported directly to BLM short term holding facilities. Public observation would be limited to morning hours when trap corrals were being checked and when wild horses were being loaded for transportation. Because human presence would preclude the wild horses entering the trap corral, contractor, BLM and public presence would be limited.

D. Data Collection

Wild Horse and Burro Specialists are 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 from the mane are collected and sent to Dr. Gus Cothran of Texas A&M University for analysis.

2) Herd Health and Viability Data Collection

WHB Specialists would document information related to age, sex, color, overall health, pregnancy, or nursing status for 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

Wild Horse and Burro 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 BCS would be recorded based on the Henneke System. This would be recorded for the population in general and/or for specific animals if necessary.

E. Euthanasia

The Authorized Office (or designee) will make decisions regarding euthanasia, in accordance with BLM policy as expressed in BLM IM 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 1971 WFRHBA, 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.

F. 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 inventory 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. 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 SERA 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 Gathering. This gather method involves utilizing a helicopter to direct wild horses or burros into a temporary corral.
2. Helicopter Assisted Roping. This gather method involves utilizing a helicopter to herd wild horses or burros to ropers.
3. Bait Trapping. This gather 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 gathered. All gather attempts shall incorporate the following:

All gather corral and holding facilities locations must be approved by the COR/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 who will consider terrain, physical barriers, access limitations, weather, extreme temperature (high and low), condition of the animals, urgency of the operation (animals facing drought, starvation, fire rehabilitation, etc.) and other factors. In consultation with the contractor the distance the animals travel will account for the different factors listed above and concerns with each HMA.
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 as quickly as possible 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 or Field Office Wild Horse and Burro Specialist.

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

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary 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 gathered 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 inventories (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 inventory 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.

F. Animal Characteristics and Behavior

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

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 any time or for any reason during BLM operations.

H. Responsibility and Lines of Communication

The CORs and the PIs have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. The Mount Lewis Field Office will be the lead office for completion of the gather. The CORs and PIs have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. The Mount Lewis Field Manager will 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, Field Managers and District Office Public Affairs Officers. 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.

III. Agency Expectations To Ensure Safe and Humane Handling of All Gathered Wild Horses – Fish Creek HMA Gather 2015

Based on the BLMs experience with previous wild horse/burro gathers and the need to adapt some gather practices to specific local conditions, the following information will be discussed with all gather personnel before gather operations begin. This discussion will serve as a reminder that the humane handling of wild horses and burros during gather operation is always a primary concern. The Contracting Officer's Technical Representative (COTR) will address any actions or issues that seem inhumane promptly and within contract specifications. Some guidelines include the following:

1. The helicopter will not be operated in a manner where internal or external forces could cause it to come into contact with an animal. Hovering by the helicopter over the wild horse and burro is acceptable so long as there is no risk of contact.
2. Handling aids (including body position, voice, flags, paddles, electric prods will be used in a manner that is consistent with domestic livestock handling procedures. Flags and paddles will be used as signaling and noise making devices first with only light contact of the flag or paddle end allowed. Animals will not be whipped or beaten.
3. Flagging and paddles will be used strategically to guard against desensitizing the wild horses and burros.
4. Kicking or hitting of wild horses and burros is not acceptable.
5. Electric prods (hotshots) will not be used routinely on wild horse and burro. Electric prods will only be used to shock animals, not to tap or hit animals. Electric prods will not be applied to sensitive areas such as the face, head, genitals or anus. Electric prods may only be used when wild horse and burro or human safety is in jeopardy or other handling aids have been tried and are not working.
6. Gates and doors will not be deliberately slammed or shut on wild horse and burro. Gates can be used to push wild horse and burro but will not be used in a manner that may catch legs.
7. Pursuing single wild horse and burro should be a rare event and not standard practice. Only the COTR will identify and request the contractor to pursue single wild horse and burro.
8. The contractor will make every effort to ensure that foals are not left behind or orphaned in the field. If a foal has to be dropped from a group being brought to the trap because it is getting too tired or cannot keep up for any reason, the contractor/pilot will document the location of the foal and the description of the mare to facilitate “pairing- up” at temporary holding, (if the foal is young enough to require this). In this case, the contractor will provide trucks/trailers and saddle horses for the retrieval of the young foal(s), and transport the foal(s) to the gather site or temporary holding. The method of capture will be authorized or requested by the COTR.
9. If during the gather any wild horses being brought in by helicopter (including foals or horses that may be aged, lame, injured or otherwise appear weak or debilitated) appear to be having difficulty keeping up with the group being brought in, the contractor will slow down to accommodate the individuals having difficulty, pause to allow those animals to rest before proceeding, drop those individuals from the group or drop the entire group. It is expected that animals may be tired, sweaty and breathing hard on arrival at a trap, but they will not be brought in by the helicopter in a manner that results in exhaustion, collapse or distress.
10. The need to rope specific wild horse and burro will be determined by the COTR on a case by case basis. The COTR will identify what wild horse and burro need to be roped.
11. While gathering, there may be wild horse and burro which escape or evade the gather site while being moved with the helicopter. In these cases there may be multiple attempts to recapture and push the wild horse and burro to the gather site. In these instances, animal condition and fatigue will be evaluated on a case by case basis to determine the number of attempts that can be made to capture/recapture. Animals will not be pursued to a point of exhaustion.
12. Any foals that are not weaned and have been maintained with their mares at the gather temporary holding corral will be transported to the BLM preparation facilities as soon as practical. Mares with dependent foals will be separated from other animals and moved to a designated mare/foal pen until they can be shipped to the BLM preparation facility.
13. All sorting, loading, or unloading of wild horse and burro will be performed during daylight hours unless approved by COTR.
14. Screening on panels will be provided where loading operations occur as a visual barrier and to block holes, gaps, or openings where wild horse and burro could attempt to escape or be injured.
15. As determined by the COTR, appropriate dust control measures will be implemented as noted in the gather contract.
16. When possible, the contractor will have the trailer floor at ground level to ease the loading of wild horse and burro at the gather site.

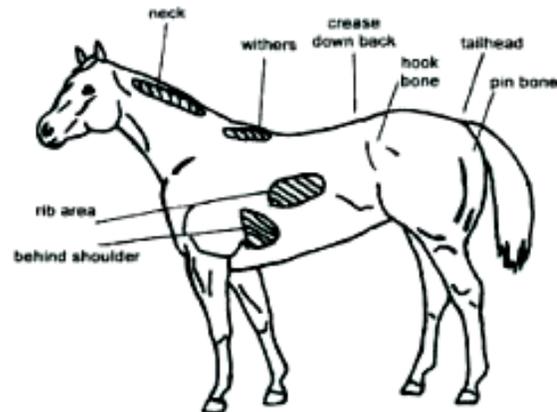
17. If the pilot is moving wild horse and burro and observes an animal that is clearly injured or suffering, the animal should be left on the range and its location noted. The BLM COTR or Project Inspector with APHIS veterinary assistance, if necessary, will then go to the area to determine the condition of the wild horse and burro and the appropriate actions necessary to address the welfare of the animal including euthanasia if needed.
18. All gather personnel; including contractors will be monitored for fatigue.
19. Injuries that required veterinary examination or treatment, deaths, and spontaneous abortions that may occur will be noted in gather reports and statistics kept by the COTR.
20. At the discretion of the COTR, if a wild horse or foal is injured during gather operations, gather operations may be temporarily suspended if necessary to provide care for the animal and safe transportation to the temporary holding corrals or BLM preparation facility as indicated.
21. The contractor, per the gather contract, shall provide animals held in the gather corrals and/or holding facilities with a supply of fresh clean water at a minimum rate of 10 gallons per adult animal per day. Troughs will be placed in scattered locations within pens to allow more area for horses to access the water.
22. Animals held overnight or for 10 hours or more in the gather corrals or holding facilities shall be provided good quality hay at a rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. Hay will be distributed around the pens such that each animal can eat at one time without overcrowding.
23. When extreme environmental conditions exist (temperature) during this gather, the overall health and well-being of the animals will be monitored and the COR will adjust gather operations as necessary to protect the animals from climatic and gather related health issues. There may be days when gather operations cease based on temperatures.
24. The success of gathering and safely and humanely caring for or handling wild horse and burro will be based on contractor and BLM staff's patience, expertise and experience.
25. The IC, COTR and contractor will ensure that the distance animals are brought to the gather site is based on the terrain, environmental conditions, and animal health. With foals, pregnant mares, or horses that are weakened by body condition, age or poor health the appropriate trailing/gather distance will be determined on a case by case basis considering the weakest or smallest animal in the group and the range and environmental conditions present. The maximum gather distance will depend on the specific animal and environmental conditions on the day of the gather, and direct dialogue with the pilot/contractor and COTR/PI will take place for each 'run' to provide important information as to numbers, number of foals, locations distance and/or overall animal and/or environmental conditions.



Fish Creek HMA, Resource Flight, Nine Mile Use Area, Aspen Community. September 17, 2014

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
1 Poor (extremely emaciated)	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						
2 Very Thin (emaciated)	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
3 Thin	Neck accentuated	Withers accentuated	Shoulder accentuated	Slight fat cover over ribs. Ribs easily discernible	Fat buildup halfway on spinous processes, but easily discernible. Transverse 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
4 Moderately Thin	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
5 Moderate	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
6 Moderately Fleshy	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
7 Fleshy	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
8 Fat	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
9 Extremely Fat	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.



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.*



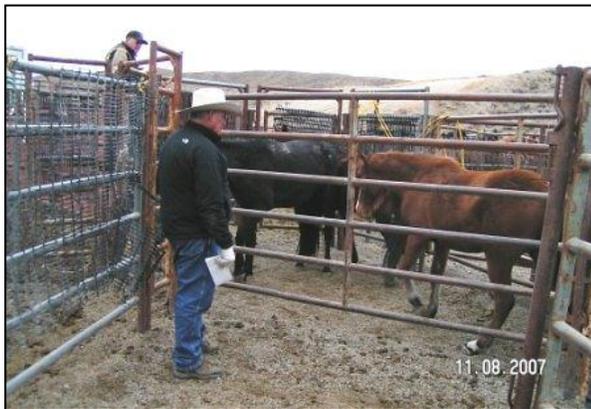
5. New Pass/Ravenswood Gather, November 2007. Mares settle in at the Holding Corrals and enjoy some hay.



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). Callaghan HMA Gather December 2008.



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 prada horse, the crew member releases him. Callaghan HMA Gather, December 2008.





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

The Fish Creek HMA is located a few miles south of Eureka, Nevada in the Antelope and Little Smokey Valleys and in the Antelope and Fish Creek Mountains. The majority of the HMA is comprised of north-south trending mountain ranges that include all or portions of the Fish Creek Range, the Mahogany Hills, and the Antelope Range. Elevations range from 6,030 feet in the wide valley bottoms, reaching 10,100 feet at Ninemile Peak.

The HMA is bordered on the east by U.S. Highway 50 in part, and natural barriers and fences to the south. U.S. Highway 50 borders the majority of the HMA on the north; however, a small portion of the HMA exists north of U.S. Highway 50, which is separated by highway right-of-way fences. This portion of the HMA is only 19,300 acres and is managed with the Whistler Mountain and Roberts Mountain HMAs. The Fish Creek HMA shares its southern boundary with the Sevenmile HMA to the south west, and the Pancake HMA (administered by the Ely District) to the south east.

The AML for the Fish Creek Ranch Allotment portion of the Fish Creek HMA was initially established at 75 wild horses in 1994 through a Final Multiple Use Decision (FMUD).

The remaining AML for the allotments within the Fish Creek HMA, (and the AML range for the Fish Creek Ranch Allotment) was established through the FMUD issued by the MLFO September 27, 2004 following the analysis of monitoring data and completion of the Fish Creek Complex Evaluation and Rangeland Health Assessment and EA #NV062-EA04-69. The total AML for the HMA was established as a range of 107 to 180 wild horses year round. The AML for the portion of the HMA south of U.S. Highway 50 is 101-170.

Wild Horse Background/Herd History

The original Herd Area (HA) boundaries are limited to areas of the public lands identified as being habitat utilized by wild horses and/or burros at the time of the passage of the Wild Free-Roaming Horse and Burro Act of 1971. The Fish Creek HMA was identified as a Herd Area (HA) following the passage Act, and has been identified for long-term management an HMA. The Fish Creek HMA boundary is identical to the Fish Creek Herd Area boundary with the exception of the portion of the HMA north of U.S. Highway 50.

According to the book *The Dames and the American Curly Horse* by Dale E. Wooley, Tom Dixon was one of the largest horse breeders in the Eureka Area, owning over 10,000 horses ranged all around Eureka, east in Long Valley, north in Diamond Valley, west in Kobeh and Monitor Valleys, southwest in Antelope Valley, south in the Fish Creek Valley and in the Newark Valley.

Tom Dixon arrived in Eureka in early 1869. After learning of the thousands of mustangs roaming Nevada, he decided to pursue business opportunities. He imported Irish mares and stallions, some Clydesdale stallions from England, and some Percherons, Shires and Clydesdales from the eastern states. With these heavy breeds, he developed a respected breeding program. He also purchased lighter breeds such as Morgan, Thoroughbred, Hambletonian and Palominos from eastern states, and imported a White Spanish Pacer from Spain. Tom bred draft, saddle, trotting horses and a few for color. He turned these horses out on the range with groups of mustangs and later gathered the offspring for sale. He became one of the best known and respected horse breeders in the state.

He is said to have brought back three curly horses from a horse trader in Delhi in early 1874 that were reported to have been from Russia. One of these horses was released to the north in the Buckskin Mine

area, located between Kelly Creek and Birch Creek in the vicinity of Pete Hanson Canyon. Another was released in White Pine County. The following year, young curly horses were seen in both regions and were later seen in Fish Creek Valley. Curly horses were also known to exist where mustangs congregated in Antelope and Kobeh Valleys. For more information about the Fish Creek area, Eureka, Nevada history or Tom Dixon, refer to the book identified above.

Herd Characteristics and Genetics

Typically, the wild horses found in the Fish Creek HMA are medium-sized, fine-boned horses, reaching approximately 14.2 hands and 800-1000 pounds when fully grown. Prominent colors include blue and red roans with other colors including palomino, buckskin, grulla, sorrel, gray, brown, and bay. The roan colors have been popular with adopters over the years.

Genetic Analysis

During the 2005 gather, 23 samples were collected for genetics analysis. The report indicates a higher than average number of variants in the Fish Creek herd. The number of rare variants was somewhat above the average percentage of rare variants and indicates some risk of future loss of alleles. Allelic diversity is well above the average for feral herds.



July 2013 trail camera photo of a large group of Roan horses gather around the water trough at the Slough water haul location.

Genetic variation in the Fish Creek herd is relatively high. The analysis indicates a possible recent population bottleneck or the possibility of mixing. Highest mean genetic similarity of the Fish Creek herd was with the Old World Spanish breeds but the values for all of the non-cold blood horse groups were similar. There was no strong allelic indication of Spanish ancestry. The Fish Creek herd does not fit into any specific group but is on the outside of the cluster of riding horses of several types. Genetic variability within the Fish Creek herd is fairly high probably due to mixed ancestry as the herd appears to be of mixed origins. The AML of this herd is fairly high as is variability so no action is required at this time according to Dr. Gus Cothran of Texas A&M.

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)
Fish Creek HMA	61	High	Old World Spanish Breeds (no strong indication of Spanish ancestry)	Jackson Mountains South, Nevada
The samples collected in 2004 were blood samples and a small sample size was collected. A larger sample size of hair will be collected during future gather events.				

Curly horses are known to exist within the Fish Creek HMA, and since the mid 1990's, has been touted as the Home of the Curly Horse. During the 1994 gather, a total of 11 captured wild horses captured were noted to have curly characteristics. In 1995 seven curly horses were relocated from the Roberts Mountain HMA into the Fish Creek HMA. Ten curly coated wild horses were captured during the 1998 gather. Many of these animals were released back to the HMA. The emergency gather of 600 animals in 2000 resulted in the capture and removal of 10 curly coated wild horses. Coat characteristics were not documented during the 2004 emergency gather. Approximately nine horses with curly coats were documented during the 2005 and 2006 gathers. All adults were selected for release back to the HMA.

Wild horses exhibiting the curly coat characteristics included sorrel, black, bay, grey, brown and roan. Genetics testing has not been done to analyze the curly genetics. It is currently unknown whether the curly characteristic is a dominant trait. With so few animals exhibiting the characteristic, it would seem reasonable that it is not.

Colors of the wild horses have been tabulated for the gathers that have been completed within the Complex. The results may vary due to time of year and differences of color expression, or discrepancies in color classification by the observers. This information is displayed in the following series of tables.

Table 2: 2005 Fish Creek Colors

Color	% of Total
Bay	34%
Dark Bay	1.5%
Sorrel	14%
Black	9%
Brown	7%
Dark Brown	0.9%
Buckskin/Dun	2%
Chestnut	1.5%
Flaxen Sorrel	0.6%
White	1.5%
Grey	8%
Grulla	0.9%
Palomino	1.5%
Blue Roan	6%
Red Roan	4%
Strawberry Roan	2%
Roan	4%
Sabino Paint	0.3%
Sorrel Paint	0.6%

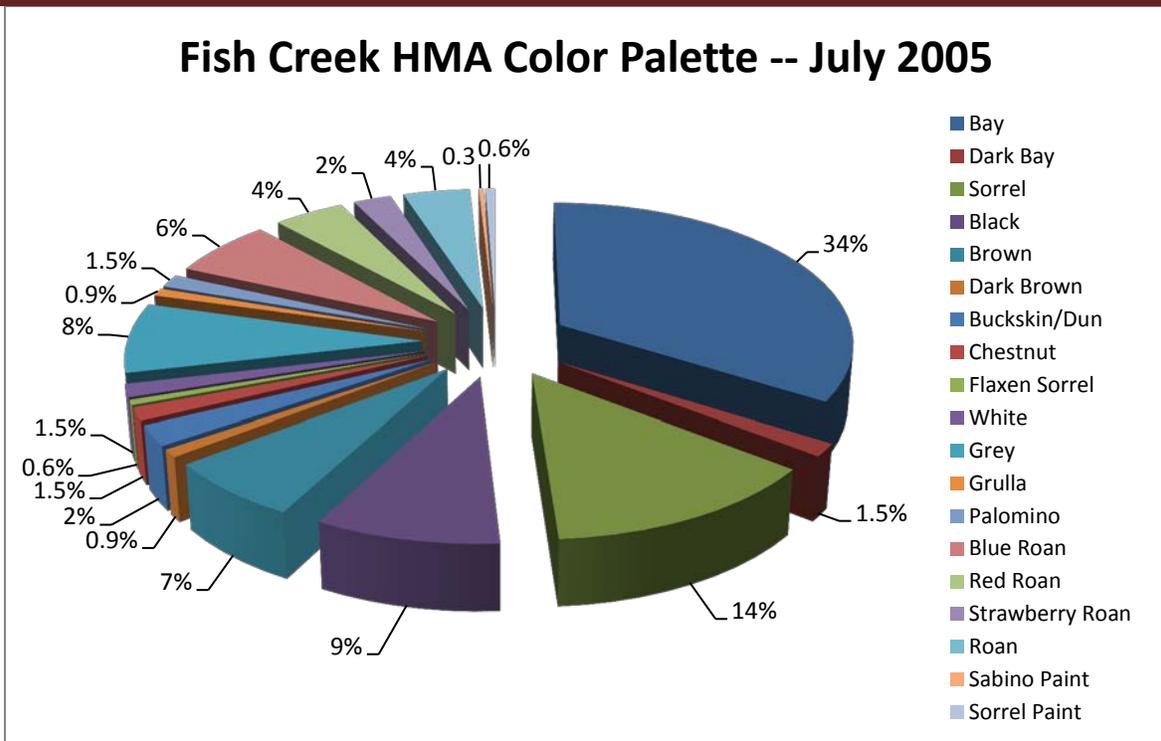


Figure 1: Fish Creek HMA Colors, 2005 Gather

Table 3: 2004 -- Emergency Gather Fish Creek Colors

Color	Number	Percent
Bay	17	31.5%
Black	9	16.6%
Brown	8	14.8%
Sorrel	6	11.1%
Red roan	4	7.4%
Dun	2	3.7%
Blue roan	2	3.7%
Roan	2	3.7%
Gray	2	3.7%
Buckskin	1	1.9%
Strawberry Roan	1	1.9%
Total	54	100.0%

Table 4: 2000 -- Emergency Gather Fish Creek Colors

Color	Percent
Bay	30.0%
Black	11.0%
Brown	5.5%
Sorrel	13.0%
Red roan	14.9%
Dun	0.2%
Blue roan	4.2%
Gray	10.0%
Buckskin	2.9%
Strawberry Roan	4.4%

Color	Percent
Appaloosa	0.34%
Paint	0.7%
Chestnut	0.8%
Palomino	1.4%

Table 5: 1998 Fish Creek Gather Colors

Color	Female	Male	Total	
			Number	Percent
Appaloosa	--	2	2	0.32%
Bay	122	93	215	34.62%
Black	17	18	35	5.64%
Blue Roan	5	6	11	1.77%
Brown	70	54	124	19.97%
Brown	1	1	2	0.32%
Buckskin	1	2	3	0.48%
Chestnut	--	2	2	0.32%
Grey	30	31	61	9.82%
Grey Appaloosa	1	--	1	0.16%
Red Dun	--	1	1	0.16%
Red Roan	47	30	77	12.40%
Roan	9	8	17	2.74%
Sorrel	33	29	62	9.98%
Strawberry Roan	5	2	7	1.13%
White	--	1	1	0.16%
Total	341	280	621	100.00%

Table 6: 1994 Fish Creek Gather Colors

Color	Female	Male	Total	
			Number	Percent
Bay	150	107	257	28.46%
Bay Curly	1	1	2	0.22%
Bay Paint	--	1	1	0.11%
Black	27	27	54	5.98%
Black Curly	2	2	4	0.44%
Blue Roan	26	33	59	6.53%
Brown	55	68	123	13.6%
Brown/Curly	1	1	2	0.22%
Buckskin	7	16	23	2.55%
Chestnut	2	11	13	1.44%
Gray	12	11	23	2.55%
Gray/White Paint	--	1	1	0.11%
Grey	12	15	27	3.00%
Grulla	3	1	4	0.44%
Palomino	2	4	6	0.66%
Red Roan	81	76	158	17.50%
Red Roan Curly	--	1	1	0.11%
Roan	--	1	1	0.11%
Sevina	1	--	1	0.11%
Sorrel	76	59	135	14.95%
Sorrel Curly	1	1	2	0.22%
Strawberry Roan	--	2	2	0.22%
White	1	3	4	0.44%
Total	460	442	903	100.00%

Wild Horse Age Structure

The following table displays the age structure of all horses gathered during the July 2005 gather activities.

Table 7, 2005 Age Structure

Fish Creek Age Structure, July 2005	
Age	% of total
Weanling	19.2%
1	6.6%
2	20.2%
3	9.6%
4	9.6%
5	4.0%
6	4.5%
7	5.1%
8	3.5%
9	1.5%
10	1.0%
11	1.5%
12	0.5%
13	0.5%
14	1.0%
15	0.5%
16	0.5%
18	0.5%
19	0.5%
20	7.6%
23	0.5%
25	0.5%
30	0.5%
32	0.5%

The table above shows an incongruity within the yearling and two year old categories which is quite common. The ages of these younger horses are typically estimated during gathers, and the mouths of these young horses are not examined to determine age, in order to avoid any additional stresses on them. Often larger yearlings are mistaken for young two-year olds. Similarly, a smaller three year old might be mistaken for a two year old as well. Likewise, the 20 year old category shows a jump in the percentage of animals represented which in reality was likely comprised of horses in their late teens and early 20's. Determining age of horses by dental examination of older animals is not an exact science, particularly in wild horse herds. This age structure analysis provides the best available information as estimated by individuals trained and experienced in the skill of wild horse age estimation.

Wild Horse Inventory

Since the most recent gather in 2006, inventory flights were completed in September 2007, September 2011 and March 2014, with resource flights conducted in August 2012, April 2013 and January 2014. Map 2 displays the wild horse locations noted during the last inventory.

Since 2001, the Fish Creek HMA inventory has been completed in conjunction with the adjoining Sevenmile HMA and Butler Basin Wild Horse Territory (WHT) and Little Fish Lake HMA/WHT. Other nearby HMAs and WHTs have also been included. In the most recent inventory, a comprehensive inventory of a large complex of every HMA and WHT between U.S. Highway 50 and the Nellis Test Site was completed including an inventory of the adjoining Pancake HMA by the Ely District.

Wild Horse Gather History

Nine removal operations have taken place within and outside of the Fish Creek HMA boundaries. These gathers were completed in 1980, 1986, 1987, 1994, 1998, 2000, 2004, 2005 and 2006. BMFO records indicate that over 2,700 wild horses have been removed from the Fish Creek HMA through these gathers. The 2000 and 2004 gathers were the result of emergencies.

1980 Wild Horse Removal

In 1980, records indicate that the BLM removed as many as 413 wild horses from the Fish Creek HMA. A total of 105 were removed from the Browns Canyon area and 56 were removed from Antelope Valley in the Lucky C Allotment. The remaining 253 were removed from Antelope Valley in the Fish Creek Ranch Allotment. No animals were released. It was estimated that over 300 animals remained inside of and in allotments surrounding the Fish Creek HMA.

1986 Wild Horse Removal

The estimated population within the Fish Creek HMA gather area was 737 wild horses. Records indicate that 99 animals were removed. A post removal inventory was conducted in September 1986 showing 658 wild horses remaining within the Fish Creek HMA.

1987 Wild Horse Removal

The records for the August 1987 removal stated that 165 wild horses were brought in from the Antelope Valley and Dry Lake area and another 138 wild horses were brought from Antelope Valley near the Number 3 Well for a total of 303 removed from the HMA. No animals were released back to the HMA.

1994 Wild Horse Removal

A wild horse gather took place within the Fish Creek HMA during August of 1994. The gather was conducted in the Fish Creek Ranch Allotment and the Lucky C Allotment north of U.S. Highway 50. Wild horses were gathered both inside and outside of the Fish Creek HMA boundary. A total of 889 were captured and 246 were released back to the HMA according to age removal criteria in place that mandated release of animals 10 years old and older.

1995 Relocation of Curly Horses from Roberts Mountain HMA

In 1995, 7 curly horses were gathered and removed from the Roberts Mountain HMA and relocated within the Fish Creek HMA.

1998 Wild Horse Gather

In 1998, wild horses were gathered from the Fish Creek Ranch and Lucky C Allotments and portions of Antelope Valley outside of the Fish Creek HMA boundary. The portions of the Lucky C and Arambel Allotments within the HMA or the area north of Highway 50 were not gathered. The eastern portion of the Fish Creek Ranch allotment, the eastern slopes of the Fish Creek Range, Little Smoky Valley, and the southwest tip of the Fish Creek Ranch allotment including Cottonwood and Indian Creek were not gathered at this time.

A total of 622 wild horses were captured during this gather. A total of 144 were released back into the

Fish Creek HMA according to age removal criteria in place that mandated release of animals 10 years old and older. 479 of the horses that were captured were shipped to Palomino Valley Center north of Sparks, Nevada for preparation into the adoption program. The gathered horses included many sorrels, red and blue roans, black, brown, white, and gray horses. A total of 11 curly horses, and two appaloosas were captured.

Fertility control (Porcine Zona Pellucidae) was administered to 52 mares older than 10, and 13 mares younger than 10 years of age being released back into the Fish Creek HMA. The vaccine was a 1-year formulation, and would have prevented pregnancy of these mares in 1999.

2000 and 2004 Drought Emergency

Drought emergency gathers were conducted in 2000 and 2004 that resulted from drought conditions and populations of wild horses that exceeded the capacity of the habitat to provide forage and water specifically in the Lucky C Allotment.



July 2004, the Slough became a deep pit of mud, preventing wild horses from being able to drink.



The Slough, July 2004.

In 2000, wild horses were moving outside of the HMA boundaries due to insufficient forage and water resources within the HMA boundaries. Limited snowfall during the winter of 1999-2000 caused springs and reservoirs within the HMA to dry up, leaving little available water for wild horses. Water hauls were set up within the HMA to alleviate some of the pressures on remaining water and range resources. A total of 600 wild horses were captured and removed from the range north of Fenstermaker Wash in the Arambel, Lucky C and Fish Creek Ranch Allotments to prevent death due to starvation and lack of water. No wild horses were released back into the Fish Creek HMA. An estimated 113 wild horses remained within the HMA following the gather.

The last emergency occurred in July 2004 when an estimated 50 wild horses were discovered using the Coils Creek Slough (The Slough), which had become a drying mud hole. Water tanks were put in the area, and Browns Canyon Well pumped, to supply water to the wild horses until an emergency gather could be conducted.

In August 2004, 55 wild horses were removed from the Lucky C Allotment portion of the Fish Creek HMA. The large numbers of wild horses using existing sources in conjunction with the past years of drought conditions caused water sources to dry up. For this reason, the decision was made in the 2004 Final Multiple Use Decision not to return wild horses to the Arambel or Lucky C Allotments (southern portion) until BLM staff could ensure that adequate water sources exist to support the established AML.

None of the gathers completed within the Fish Creek HMA prior to 2005/2006 were complete gathers of the entire HMA, and AML was not achieved. The 1994 and 1998 gathers involved age removal criteria in which wild horses 10 years old and older were released back to the range and younger animals were transported to BLM facilities Adoption Program.

2005 and 2006 gathers

Gathers were conducted in July 2005 and February 2006 to achieve the AML. A total of 309 wild horses were removed during these gathers.

The 2005 Fish Creek Complex was completed in July 2005. The 2006 portion was completed in January and February 2006. The gather involved the following areas:

1. Little Fish Lake HMA and WHT
2. Sevenmile HMA and Butler Basin WHT
3. North Monitor HMA
4. Fish Creek HMA
5. Outside of HMA: Hicks Station/Snowball Ranch Allotments (BLM) and Hot Creek and Morey Allotments USFS.

Table 8: Fish Creek HMA Gather Results

	JULY 2005	JANUARY 2006
Planned Gather #	362	151
Actual Gathered #	200	131
Planned Removal #	336	151
Actual Removal #	165	114
Released	34	17
Number left on range	195	57
Appropriate Management Level	101-170	101-170

Wild Horse Distribution and Movement Patterns

Wild horse movement is influenced by climate and resulting precipitation, availability of forage and water, and population size which is directly related to animal density and resulting competition and conflict between bands. Movement of wild horses may also be influenced by the presence of livestock.

Wild horse populations within the Fish Creek HMA fluctuate year long as animals move through the allotments associated with the HMA in response to snow cover and water availability. The wild horse population size, and nature of the movement throughout the year, has resulted in large numbers of wild horses concentrating in portions of the Lucky C and Fish Creek Ranch Allotments, impacting vegetative resources. Population levels have caused wild horses to move outside of the HMA boundaries in Lucky C and Fish Creek Ranch Allotments.

The northern and southern portions of the Lucky C Allotment are fenced and divided by U.S. Highway 50, preventing the wild horses from moving throughout the allotment. The portion of the Fish Creek HMA north of U.S. Highway 50 is not extensively utilized by wild horses. Little water exists within HMA boundaries, and as a result, wild horses do not remain inside the HMA but move throughout Kobeh Valley and drift into Whistler and Roberts Mountain HMAs. Due to lack of available water, a group of wild horses had to be removed from Kobeh Valley in 2001. There are no fences dividing the

Fish Creek HMA from the Whistler Mountain HMA in Lucky C Allotment (northern portion).

Wild horse use and distribution appears to be from a combination of forage and water availability, generally utilizing higher elevations during the summer and moving to the valley floor and foothills during winter months.

Wild horses located in the northern portion of the HMA are known to water at Slough Creek, trailing east into Mahogany Hills as water is available at Dry Lake, McCullough Spring and other seasonal water sources. Wild horses have also been observed utilizing the areas between Antelope Valley and southern Mahogany Hills, watering at Davis Pipeline and or developed water sources within the valley.

The population within the Fish Creek Ranch Allotment fluctuates through the year as wild horses move into the allotment from Lucky C and Arambel Allotments in response to snow cover or dwindling water sources. Wild horses tend to move into Antelope Valley predominantly during the winter months. This portion of their range contains large areas of winterfat, which has been documented in the past as receiving moderate to severe grazing by both wild horses and livestock. Past documentation indicates wild horses have congregated in the winterfat flats during the spring months as long as water is available placing use on winterfat during its critical growing season.

When the Arambel Allotment is covered with snow, wild horses move into the Fish Creek Ranch, and Lucky C Allotments. In early spring, as snow melts, wild horses move back into the Arambel Allotment. They remain there until water sources become limited, at which time they again move into the Fish Creek Ranch, and Lucky C Allotments. Wild horses within the Lucky C Allotment move outside of the HMA boundaries west into Antelope Valley. Depending upon the population size, time of year and environmental conditions, use outside of the HMA boundaries can be (and has been) extensive.

Within the Fish Creek Allotment, horses move into the lower elevations, valleys, and foothills during the winter when snow covers the mountains (Antelope and Fish Creek Ranges). As snow melts in the summer, wild horses use higher elevations in both mountain ranges. A portion of the wild horse population typically remains in the valleys and can be predictably observed in certain locations throughout the summer months. Wild horses are frequently observed using the foothills east of Antelope Valley. They also use the foothills north of Fenstermaker Wash. Depending upon population size, and environmental conditions, the wild horses may utilize the east flank of the Fish Creek Range and Little Smoky Valley. Their use of the Ninemile Peak area in the Antelope Range fluctuates with snow cover and moisture conditions. Minimal numbers of animals have been observed in the area in most years, with the exception of 2000, which was a drought year. .

Aerial inventory and field monitoring data does not indicate wild horses make more than incidental use of the Ruby Hill Allotment. Adequate water and forage resources exist for wild horses within the allotment. Wild horses may not use the area due to the proximity to Eureka, topography limitations, the presence of recreationalists, and historic and current mining activity.

Wild horses move outside of the HMA boundaries into Antelope and Little Smoky Valleys, with the occurrence mostly tied to wild horse population size. Aerial inventory data shows wild horses frequently located in areas outside of the HMA. Additionally Fish Creek HMA wild horses are suspected to move south into Sevenmile HMA, and east and south into the Pancake HMA. These suspicions have been documented in the BMFO files since the late 1980's.

Fertility Control

During the January 1998 gather of the Fish Creek HMA, fertility control vaccine (PZP) was administered to all (52) mares 10 years and older released back onto the HMA. The vaccine was a 1-year formulation, and would have prevented pregnancy of these mares in 1999. 13 mares under 10 years of age were also given the drug and released, for a total of 65 mares treated. The mares were freeze marked with a large "X" on the left hip. There were no injuries or other problems encountered during the administration of fertility control vaccine. A follow-up flight completed in September 1999 indicated that the treatment was 90% effective.

During the 2000 emergency gather, 34 of the mares freeze marked with the X on the hip were captured and removed from the HMA. These animals were not aged at the holding corrals; however lactation status, sex and color was documented for the 600 animals captured. Of the 34 mares, 23 (68%) were noted to be lactating ("wet"), indicating that they had foals.

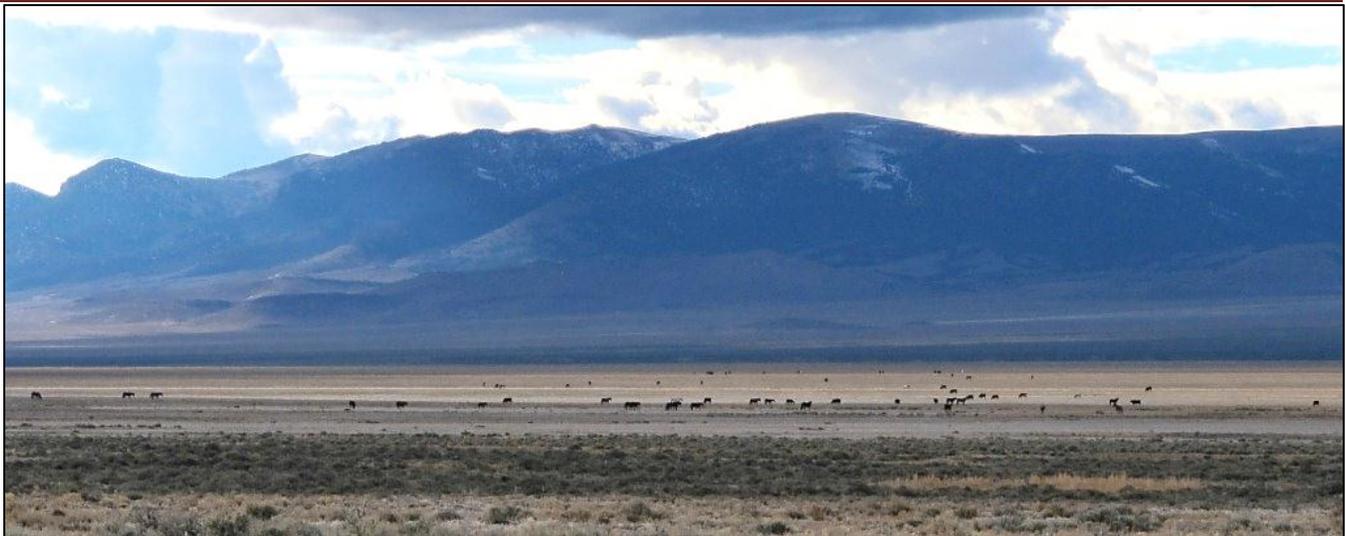
While gathering the Fish Creek HMA in 2005, several mares were captured that had been administered Fertility Control vaccine during the 1998 gather. A total of six mares with an X freeze marked on the left hip were captured from the Fenstermaker Wash trap. The mares were 19-20+ years of age. Four of the six were noted to be lactating. Most mares were noted to be in exceptionally good condition for their age.



Thin palomino drinking from a small pool at McCullough Springs, June 2012.



Wild horses near Fenstermaker Wash. Dead sagebrush community in the foreground. June 2014.



Wild horses and cattle spread out across Antelope Valley, December 2014.



Trail camera photos of one group of horses 2012-2014, clockwise from top left.

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: Precipitation, Drought and Monitoring

Precipitation-Eureka Weather Station¹⁸

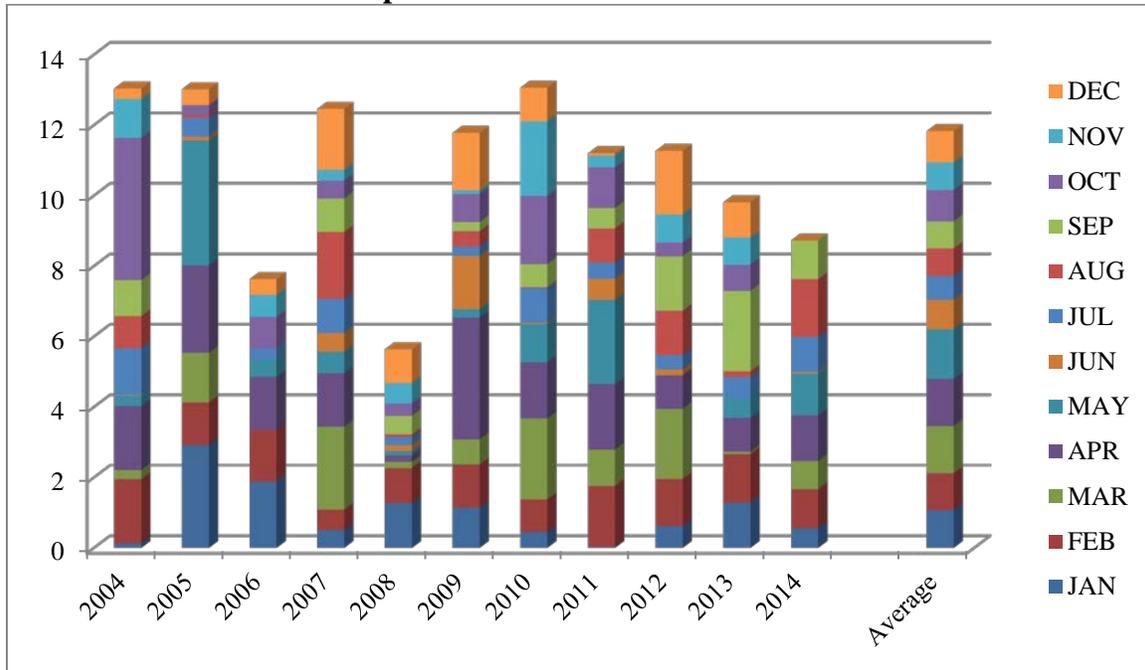


Figure D.1

Table 1: Monthly Precipitation Totals, Eureka, Nevada

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2004	0.13	1.82	0.26	1.82	0.29	0.02	1.33	0.91	1.02	4.04	1.1	0.3	13.04
2005	2.92	1.21	1.41	2.48	3.55	0.1	0.54	0.08	0	0.28	0	0.45	13.02
2006	1.89	1.46	0	1.51	0.49	0	0.32	0	0	0.89	0.62	0.45	7.63
2007	0.51	0.58	2.35	1.52	0.61	0.53	0.97	1.9	0.95	0.51	0.3	1.73	12.46
2008	1.27	1	0.18	0.18	0.12	0.17	0.23	0.07	0.53	0.35	0.58	0.96	5.64
2009	1.15	1.22	0.71	3.45	0.25	1.51	0.26	0.44	0.26	0.8	0.1	1.63	11.78
2010	0.45	0.93	2.3	1.59	1.08	0.04	0.99	0.02	0.65	1.94	2.12	0.95	13.06
2011	0.02	1.74	1.03	1.86	2.39	0.6	0.46	0.97	0.58	1.15	0.34	0.06	11.2
2012	0.62	1.34	1.99	0.95	0	0.17	0.4	0.7	NA	NA	NA	NA	6.17
2012	0.62	1.34	1.99	0.95	0	0.17	0.4	1.26	1.55	0.39	0.8	1.8	11.27
2013	1.29	1.37	0.08	0.95	0.54	0	0.62	0.16	2.29	0.74	0.77	1	9.81
2014	0.57	1.1	0.8	1.29	1.19	0.04	1	1.64	1.1	0	-----	-----	8.73
Average	1.07	1.05	1.34	1.34	1.41	0.83	0.68	0.78	0.77	0.89	0.78	0.89	11.82

¹⁸ Precipitation data obtained from the Nevada Climate Summaries available from the Western Regional Climate Center. <http://www.wrcc.dri.edu/climate-summaries/>

Precipitation Beowawe, Nevada: University of Nevada, Reno Gund Ranch.

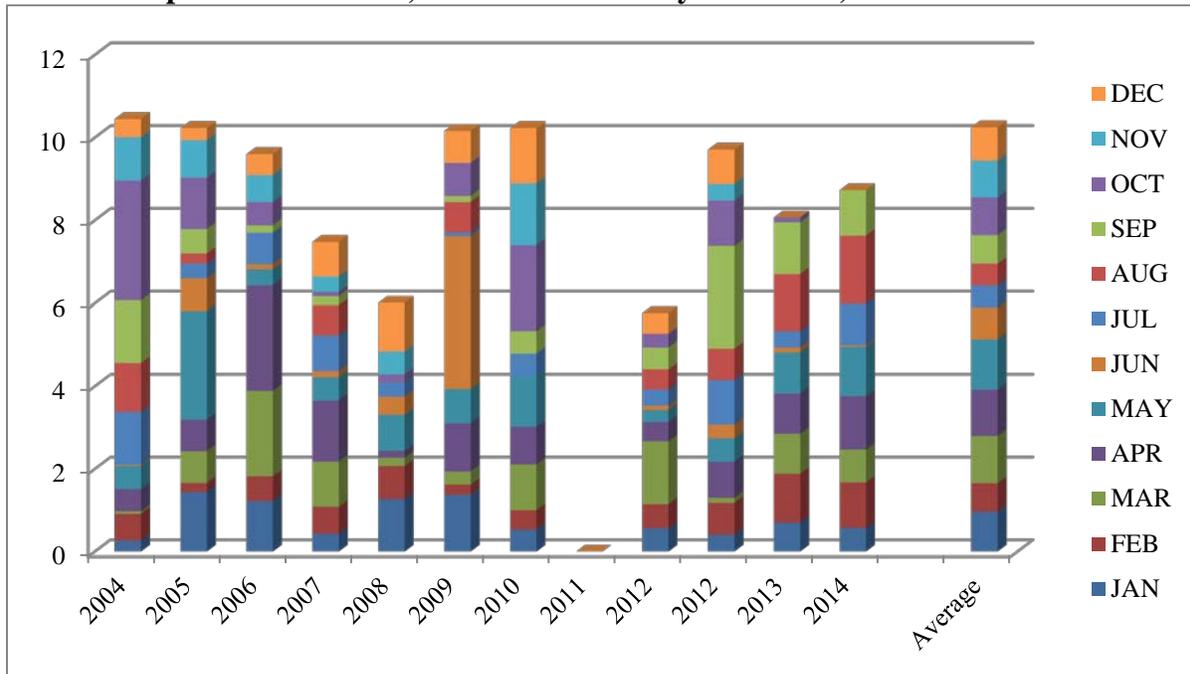


Figure D.2

Table 2: Monthly Precipitation Totals, Beowawe, NV

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2004	0.27	0.64	0.07	0.53	0.56	0.03	1.28	1.18	1.51	2.89	1.05	0.44	9.81
2005	1.44	0.22	0.77	0.76	2.63	0.78	0.35	0.25	0.59	1.24	0.91	0.29	10.23
2006	1.22	0.6	2.07	2.54	0.38	0.13	0.76	0	0.18	0.56	0.65	0.51	9.6
2007	0.43	0.65	1.1	1.48	0.56	0.15	0.86	0.72	0.22	0.1	0.37	0.84	7.48
2008	1.27	0.8	0.2	0.17	0.87	0.44	0.36	0.01	0	0.17	0.55	1.17	6.01
2009	1.38	0.24	0.32	1.16	0.83	3.69	0.09	0.73	0.15	0.8	0	0.77	10.16
2010	0.53	0.47	1.11	0.91	1.21	0	0.56	0	0.54	2.07	1.49	1.34	10.23
2011	Unavailable												
2012	0.56	0.59	1.52	0.47	0.29	0.1	0.39	0.64	NA	NA	NA	NA	3.53
2012	0.56	0.59	1.52	0.47	0.29	0.1	0.39	0.49	0.53	0.33	-----	0.5	5.27
2013	0.41	0.77	0.12	0.88	0.56	0.33	1.08	0.76	2.47	1.1	0.4	0.83	9.71
2014	0.7	1.18	0.97	0.98	0.99	0.12	0.39	1.37	1.25	0.12	-----	-----	7.95
Average	0.96	0.69	1.15	1.12	1.21	0.77	0.53	0.52	0.69	0.91	0.89	0.81	10.23

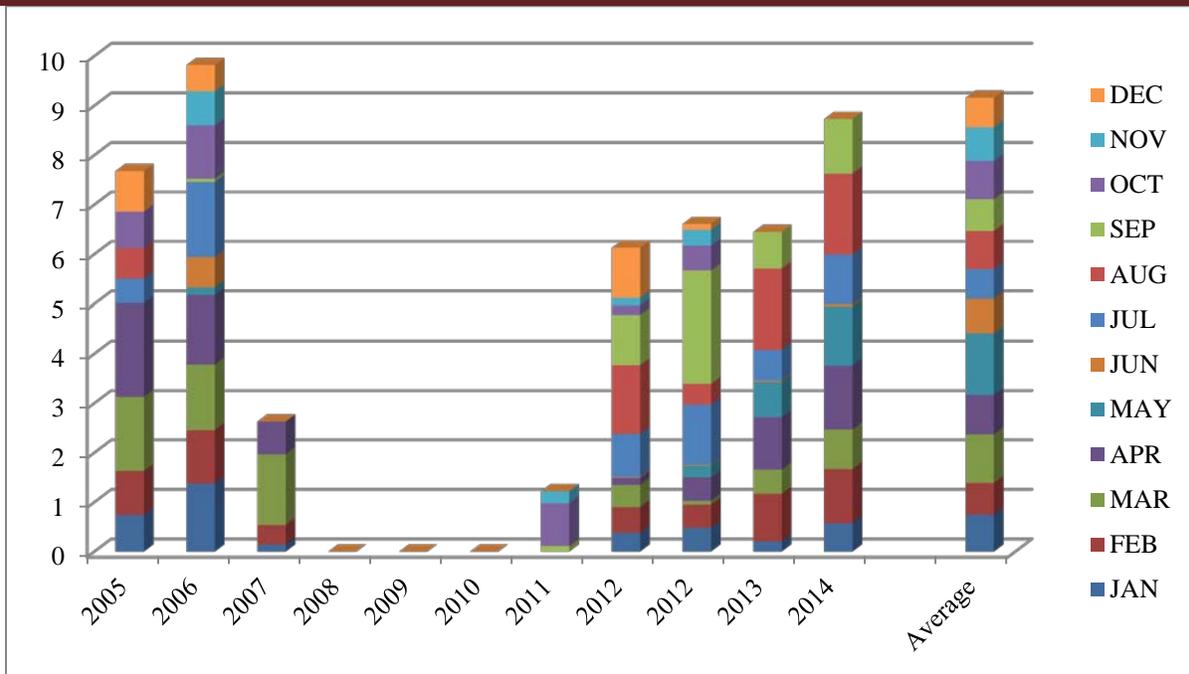


Figure D.3

Table 2: Monthly Precipitation Totals, Diamond Valley, NV

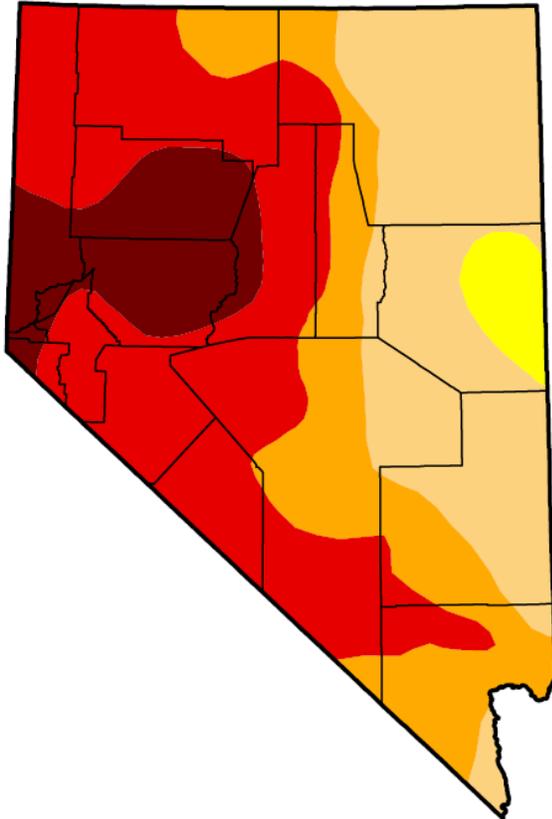
YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2005	0.74	0.89	1.5	1.89	----	----	0.49	0.61	----	0.74	----	0.82	7.68
2006	1.37	1.09	1.32	1.4	0.15	0.61	1.52	0	0.06	1.08	0.69	0.53	9.82
2007	0.14	0.4	1.43	0.66	----	----	----	----	----	----	----	----	2.63
2008	----	----	----	----	----	----	----	----	----	----	----	----	0
2009	---Not Available---												
2010	----	----	----	----	----	----	----	----	----	----	----	----	0
2011	----	----	----	----	----	----	----	----	0.11	0.87	0.24	0	1.22
2012	0.38	0.52	0.45	0.14	0	0.02	0.87	1.39	1.01	0.19	0.15	1.01	6.13
2013	0.48	0.47	0.08	0.47	0.24	0.02	1.21	0.42	2.28	0.5	0.32	0.12	6.61
2014	0.2	0.97	0.49	1.06	0.71	0.03	0.62	1.63	0.74	0	----	----	6.45
Average	0.75	0.64	0.98	0.8	1.24	0.69	0.6	0.77	0.64	0.77	0.68	0.6	9.16

Drought and Drought Monitoring

Much of the west has been experiencing severe to exceptional drought since 2012 as illustrated through the climate data. The BLM uses data provided by the U.S. Drought Monitor (<http://droughtmonitor.unl.edu>) to further forecast potential drought and plan monitoring activities. The following map represents the Drought Monitor for Nevada as of December 9, 2014. Similar maps are released every month and archived maps and other data are available on the website provided.

U.S. Drought Monitor Nevada

December 9, 2014
 (Released Thursday, Dec. 11, 2014)
 Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	97.04	68.25	48.38	11.89
Last Week 12/2/2014	0.00	100.00	97.04	68.25	48.38	11.89
3 Months Ago 9/9/2014	0.00	100.00	99.64	80.96	50.30	11.89
Start of Calendar Year 12/31/2013	0.39	99.61	96.81	77.66	28.55	5.37
Start of Water Year 9/30/2014	0.00	100.00	97.04	69.89	48.38	11.89
One Year Ago 12/10/2013	0.39	99.61	96.81	77.66	28.55	5.37

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
 Anthony Artusa
 NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

The Fish Creek HMA area is currently within the Severe Drought classification, and has been in Severe and Extreme drought since 2012. Locally, degrees of drought impacts varied widely due to precipitation events, soil and vegetation factors and rangeland health. Throughout the region, little perennial vegetation grew throughout the low elevations and foothills, and drought stress was widespread and severe.

Late summer thunderstorms and rain events helped provide regrowth of some perennial species, which exceeded the original spring growth in many locations. However, the additional precipitation was not sufficient to provide adequate growth or recovery of forage. The 2013 season brought continued drought. Effects of drought included stunted plant growth and poor plant vigor. Again, late summer rainstorms provided much needed relief and provided for regrowth of many of the perennial grasses. Though the precipitation shows highly variable results between the stations, monitoring data showed that the lower elevation valley bottoms were continuing to suffer the effects of drought, with poor production of perennial grasses, and drought stressed plants. Concerns since 2012 have been for water availability and for forage availability, particularly in winter months.

Drought conditions have continued into 2014; however the precipitation data shows some improvement during spring months over the previous years. The effects of drought continued to impact subsoil moisture which likely has caused widespread death of Wyoming Sagebrush throughout the area (photos).

Waters are somewhat limited within the Fish Creek HMA. Many water sources springs quickly dried up in spring 2012, and have supported little water since, mostly in the early spring. As a result, several developed water sources were maintained and operated for wild horses, and water hauling occurred at two locations since 2012.

Monitoring of these escalating issues has been ongoing as the forage and water availability threatens to lead to declining wild horse body condition and potential emergency situation. Large portions of the Fish Creek HMA are in diminished ecological condition and have limited forage availability. Progress towards improved rangeland health is a lengthy process in arid western rangelands under the best of conditions.

Drought Monitoring

Monitoring included completion of a Drought Summary Form, Utilization Studies, photographs and general observational notes of range and wild horse condition. The Battle Mountain District Drought Detection and Monitoring Plan included within the Battle Mountain District Drought Management EA DOI-BLM-NV-B000-2012-0005-EA, describes the drought indicators and response triggers documented during the 2012 monitoring season.



Lowest of five troughs on Davis Pipeline, June 2014.



McCullough Springs June 2012, this was the only water available to the horses in the area.

Monitoring showed new vegetation growth was minimal during the 2014 growing season due to continuing drought conditions. During monitoring conducted in July, monitoring indicated minimal growth to no growth on winterfat and minimal growth of grass species. Rain storms that passed through the area produced enough precipitation to provide for moderate regrowth of grasses and winterfat in late summer. On December 1st utilization monitoring was conducted at monitoring areas in the Antelope Valley Use Area. Two key species were recorded when monitoring, Indian ricegrass and winterfat. Indian ricegrass the key forage specie, ranged from 8.16 % to 60.6% utilization across 7 monitoring areas. Winterfat ranged from 2.5% to 22.98% utilization at six monitoring locations. Utilization triggers for drought monitoring are 25% for key species in salt desert shrub, and 30% for sagebrush grassland communities. Current livestock in this particular area reflect only a portion of the permit, and the BLM is working with the permittee to implement a rotational system to reduce utilization levels, and

avoid the winterfat communities within the HMA. Wild horse use of these areas will continue to increase due to winter conditions and snow accumulation in the mountains which causes wild horses to move down into the valleys.

Utilization in the valley has increased during drought years for numerous reasons. The current drought conditions are minimizing the available water for wild horses, due to decreased spring and stream flows. With the growing population, and limited waters, wild horses are concentrating on existing waters, and are also dependent on wells pumped by the livestock operator. Should livestock numbers be further reduced or removed from the grazing allotments, these wells will not be pumped, these waters will no longer be available to wild horses.

Most monitoring has been conducted in the valley and foothills. Much of the lower elevation foothills which provide valuable winter habitat for wild horses and wildlife are in a degraded. Over population of wild horses and historic use by livestock has contributed to the current condition of these sites.



Indian ricegrass and winterfat at the monitoring location FC-5 in Fenstermaker Wash.

The relative quantity of vegetative cover removed by grazing also affects soil properties. In general, vegetative cover provides shading for soils, which increases their ability to retain moisture, reduces soil erosion by intercepting precipitation and reducing surface wind velocities, and provides organic input into the soil (Beever and Herrick 2006).

Fish Creek HMA Monitoring Summary

Since 2012, continued monitoring has documented the following:

- The occurrence of or increased occurrence of pedestalling of grasses, particularly Sandberg bluegrass and Indian ricegrass, often due to hoof action and/or erosion.
- Increased occurrence of key forage grasses being caged in shrubs as the “exposed grasses” in the interspaces were grazed or disappeared from the plant community. Caged grasses were frequently noted as being more vigorous than those in the interspaces.
- Increased occurrence of trailing by wild horses
- Shrubs and grasses chewed or grazed down to the soil level.
- Dead grass crowns pulled from the soil.
- Increased occurrence of soil movement.
- Increased documentation of poor vigor.
- Declining health of sites.
- Increased hedging of shrubs.

In 2007 Nested Frequency was conducted to document conditions after the 2005/2006 gathers and 2004 Fish Creek Complex Rangeland Health Evaluation, which reduced AUMs allocated to livestock grazing. Future monitoring will include continued drought and utilization monitoring, and monitoring of the Indicators of Rangeland Health for future Rangeland Health Evaluations.

During monitoring field work, observers collect observational data including hoof tracks, droppings and animal sightings. In many cases, it is possible to identify the primary animal using the area by the tracks, trails and sign. This information is also useful to track trends of use throughout the year, and identify wildlife use patterns as well. Wild horse tracks and cattle tracks are easily differentiated, as are droppings. When possible, the age of droppings is estimated (fresh, old, very old), as indicated by color and texture. When studies are conducted prior to livestock grazing, it is possible to document the degree of use of an area and utilization by wild horses, pronghorn and muledeer. When livestock are present, or after livestock are removed in the fall, field observers document the abundance of tracks, trailing and droppings as well as known use patterns, and the utilization of the vegetation.



Wild horses run through degraded winterfat communities in Antelope Valley. Reddish vegetation is Halogeton, and invasive weed. September 2014 Resource Flight.

When studies are conducted prior to livestock grazing, it is possible to document the degree of use of an area and utilization by wild horses, pronghorn and muledeer. When livestock are present, or after livestock are removed in the fall, field observers document the abundance of tracks, trailing and droppings as well as known use patterns, and the utilization of the vegetation.

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.

For additional information about Drought in Nevada and the Western U.S., refer to the following websites:

US. Drought Portal:

http://www.drought.gov/portal/server.pt/community/drought_gov/202;jsessionid=B225BB1B2A6C3E988AE64056A67F4D52

US Drought Monitor: <http://droughtmonitor.unl.edu/>

Vegetation Drought Response Index: <http://www.drought.unl.edu/MonitoringTools/VegDRI.aspx>



Fish Creek HMA Winterfat Community June 2012.



Drought stressed Indian ricegrass, June 2014.



Monitoring site FC-5, Winterfat Community December 2014.



Monitoring site FC-8, Winterfat Community December 2014.



Monitoring site FC-18, Winterfat Community December 2014.



Supplemental monitoring site, Winterfat Community December 2014.

Appendix E: 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.

The purpose of the modeling was to compare the potential results of the Proposed Action and Alternatives including the No Action 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.

The current WinEquus Population Model includes options for management by Fertility Control Only, Removals only or Removals and Fertility Control. The model was created to show implementation of all of the management through actual gathers, removals and treatment of horses. Currently, there are no options to implement booster treatment of fertility control via darting or initial or repeat treatment of PZP-22 via bait and water trapping.

The program is also limited in that a specific number of horses to remove cannot be identified for various gather scenarios. For example, the program will not allow the user to show an initial gather event and removal of 200 horses with initial treatment of PZP, and then follow up boosting of ZonaStat-H via darting, or capture by bait and water trapping with no future removals. In order to overcome this obstacle for modeling of the Proposed Action, the estimated “post-gather” population after the initial phase of the gather was modelled out through the 10 years showing annual booster treatment of 90% of the mares. The model was set to show annual “gathers” of 90% of the population in order to achieve this.

Therefore, the results for “Gathered” under the Proposed Action are not representative, and actually shows that 90% of the population was gathered annually. Additionally, under the Proposed Action, the objective is to follow up with boosting of mares to the extent possible using bait and water trapping and darting, with the understanding that periodic helicopter gathers could be necessary to effectively identify mares born on the range following the initial gather, collect genetics samples, apply freemarkers and implement limited removals of young animals to make progress towards achieving or maintaining the established AML. It is possible that these activities could be achieved through bait and water trapping. However it is also realistic that bait and water trapping may not be effective enough to meet the needs for the long term management plan. For the purposes of this analysis, it is assumed that under the Proposed Action, that a second helicopter gather may be necessary at approximately 5 years or 2020, at which time any mares born since 2015 would be vaccinated with PZP-22 or other current formulation and properly identified for future boosting and monitoring. At this time as well, the assumption is made that at least weanlings and yearlings would be removed, if not additional horses in order to achieve the established AML.

Within the tables below, the modeling for the proposed action was initiated with an estimated post gather population of 349. So in Maximum population, the existing population of 549 is not included. Additionally, it is not included in the Average Population, and animals Removed. Therefore, when reviewing this data, the absence of the 200 wild horses identified for removal in the initial gather should be considered. Additionally, the mares identified for PGS during the initial gather in 2015 are not included under the Modelling for the Proposed Action. Because the model result show the entire population “gathered” annually for PZP boosting, this column is not reflecting the objectives of the Proposed Action which would include only mares being boosted each year via darting or bait and water trapping, supplemented by bait and water trapping and helicopter gathers as necessary. This is the case for Alternative 2 as well, which does not include helicopter gathers or removals in the management plan, and control of the population only through bait and water trapping and darting with fertility control. The model shows the entire population gathered annually in order to booster or treat mares.

Alternative 1 was initiated with the current estimated population of 549, with a gather implemented in 2015. Young age groups were selected for removal only (≤ 4), through gathers planned for every 3 years.

Alternative 2 does not involve any gathers and was set to “gather” (bait/water trap and darting) 90% of the population annually starting with the initial population of 549.

Refer to the end of this Appendix for the parameters used in the modeling.

Population Modeling Tables

Table 1: Population Sizes in 11 years - Minimum

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	137	77	157	101	549
10 th percentile	243	130	362	139	558
25 th percentile	280	150	429	160	568
Median Trial	314	168	494	178	592
75 th percentile	353	208	572	204	626
90 th percentile	401	239	606	233	683
Highest Trial	475	289	815	290	786

Table 2: Population Sizes in 11 years - Average

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	244	265	446	263	1367
10 th percentile	349	300	518	298	1543
25 th percentile	375	328	569	318	1716
Median Trial	408	366	627	342	1829

75 th percentile	446	399	680	360	1976
90 th percentile	486	426	740	386	2216
Highest Trial	545	516	932	453	2510

The average populations of the Alternative with fertility control treatments with no removals and the No Action reflect the highest levels. The Proposed Action, Alternative 1 and 3 include removals with or without fertility control, which is reflected in lower population figures overall.

Table 3: Population Sizes in 11 years - Maximum

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	367	552	608	551	2603
10 th percentile	448	564	650	560	3096
25 th percentile	476	576	702	574	3526
Median Trial	506	597	752	598	3910
75 th percentile	544	622	806	636	4294
90 th percentile	582	658	864	678	4621
Highest Trial	661	932	1065	788	5943

Table 4: Average Growth Rate in 10 Years

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	-10.8	9.9	-11.6	-1.5	15.6
10 th percentile	-4.2	16.0	-5.2	3.4	18.2
25 th percentile	-3.1	18.1	-3.3	5.2	19.4
Median Trial	-2.1	20.7	-1.7	6.4	20.5
75 th percentile	-0.6	22.6	-0.5	8.3	21.6
90 th percentile	0.6	24.0	0.3	9.5	22.3
Highest Trial	2.0	26.8	2.0	11.9	25.9

As expected, the Proposed Action and Alternative 2 which involve the most intense plans for implementation also reflect the lowest growth rates, with the median trials for both reflecting negative growth rates. Alternative 3 involves the application of fertility control only during gathers, and though reflects a lower growth rate than the Alternative 1 and No Action, is still much lower than normal growth rates in untreated herds.

Table 5: Totals in 11 Years -- Gathered

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	2283	1055	4198	957	0
10 th percentile	3126	1306	4764	1150	0
25 th percentile	3311	1403	5220	1250	0
Median Trial	3633	1546	5664	1320	0
75 th percentile	3954	1680	6180	1393	0
90 th percentile	4262	1760	6682	1464	0

Highest Trial	4879	2183	8466	1723	0
---------------	------	------	------	------	---

Since the post gather population was used for the model under the Proposed Action, the gathered figures do not reflect the approximate 500-549 gathered initially in 2015. The Proposed Action and Alternative 2 reflect what the model estimated as 90% of the population gathered each year, which is not the case. At this time, it is not possible to model the number of wild horses that might be gathered through helicopter, bait and water trapping under the Proposed Action and through bait and water trapping for Alternative 2. Alternative 1 and 3 each involve gathers every 3 years to remove wild horses. Alternative 1 does not include fertility control, while Alternative 3 does. The differences are reflected in slightly lower gather numbers under Alternative 3.

Table 6: Totals in 11 Years -- Removed

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	Variable, see discussion	681	0	452	0
10 th percentile		849	0	548	0
25 th percentile		914	0	588	0
Median Trial		1000	0	634	0
75 th percentile		1088	0	674	0
90 th percentile		1170	0	723	0
Highest Trial		1392	0	812	0

Because the actual gathers that could be completed under the Proposed Action through bait and water trapping and helicopter gathers are not known, and cannot be entered into the model with the current program, no data is available for the number of removed wild horses as the model was structured for Fertility Control Only. Also, the model was set to begin scenarios after the initial 2015 gather, and using the estimated post gather population. An estimated 200 horses would be removed in 2015. Through bait and water trapping efforts small numbers of young, adoptable horses could be removed, which would hinge on National holding facilities, resource concerns and management targets. It is estimated that by 2020, a gather conducted by helicopter would be needed to identify, freezemark and treat mares born on the range since 2015. For this example, it is estimated that an average of 400 horses total would be removed from this HMA.

Alternative 1 does not include fertility control, while Alternative 3 does. The differences are reflected in much higher removal numbers under Alternative 1, without the fertility control to reduce population growth. Both Alternatives include removal of only wild horses four years old or younger.

Table 7: Totals in 11 Years -- Treated

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Lowest Trial	1118	0	2002	182	0
10 th percentile	1274	0	2203	212	0
25 th percentile	1393	0	2404	231	0

Trial	Alternative				
	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
Median Trial	1486	0	2602	244	0
75 th percentile	1634	0	2810	261	0
90 th percentile	1731	0	2981	273	0
Highest Trial	2009	0	3826	321	0

The Proposed Action includes the boosting of mares with PZP through darting and bait and water trapping to supplement helicopter gathers. Since the post gather population was used for the model under the Proposed Action, the gathered figures do not reflect the approximate 150 mares treated initially in 2015. Alternative 2 only includes bait and water trapping and darting of wild horses with no removals. The model was set to show annual “gathers” to treat 90% of the mares with PZP for both the Alternatives. Because Alternative 2 does not involve any removals (particularly in 2015), the population is higher from the start, and therefore involves more mares that would be treated. Under the typical trial, the Proposed Action reflects a treatment of 1417 mares over the 11 year time frame, ranging from 87 to 173 and averaging 129 per year.

Alternative 2 reflects an average of 252 mares treated annually in the typical trial, ranging from 149 to 314 annually and totaling 2776 over the 11 year period modelled.

As the table shows, Alternative 3 involves treatment of fewer mares as they would only be treated for fertility control during gathers. The model was set to implement the PZP-22 and gather 90% of the population every three years. The typical trial reflects the number of mares treated totaling 233 over the 11 years, ranging from 24 to 100 during each gather event.

The data from the log file for each Alternative was opened in Excel and Pivot tables used to display the number of wild horses per year for the Most Typical Trial. Comparison among the alternatives is useful to assess the relative size of the population over time. Table 9 includes removal numbers reflected for the Most Typical Trial, by alternative.

Table 8: Typical Trial Populations

Year	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
	Typical Trial Population				
Year 1 - 2015	354	586	623	588	577
Year 2 - 2016	497	355	667	410	606
Year 3 - 2017	497	431	632	399	772
Year 4 -- 2018	478	507	581	435	803
Year 5 - 2019	453	285	585	324	805
Year 6 - 2020	424	338	692	308	882
Year 7 - 2021	403	397	654	307	997
Year 8 - 2022	367	252	603	225	1166
Year 9 - 2023	359	270	489	214	1235

Year	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
	Typical Trial Population				
Year 10 - 2024	348	314	477	230	1239
Year 11 -- 2025	324	204	420	183	1417
Average	409	364	579	340	925

Table 9: Typical Trial Removals

Year	Proposed Action FC/Darting	Alternative 1 No FC	Alternative 2 FC No Removals	Alternative 3 CTR/SRA	No Action
	Typical Trial Removals				
Year 1 - 2015	200	310	0	279**	0
Year 2 - 2016	0	0	0	0	0
Year 3 - 2017	0	0	0	0	0
Year 4 -- 2018	0	263	0	148	0
Year 5 - 2019	0	0	0	0	0
Year 6 - 2020	Est 200*	0	0	0	0
Year 7 - 2021	0	212	0	50	0
Year 8 - 2022	0	0	0	0	0
Year 9 - 2023	0	0	0	0	0
Year 10 - 2024	0	155	0	65	0
Year 11 -- 2025	0	0	0	0	0
Total	400	940	0	542	0

*Only an estimate under the most limited removal scenario, and is not within the model analysis for population size or growth rates in years 2012-2015. Wild horses could be removed with any bait or water trapping, and helicopter gather scheduled during any year if approved nationally and necessary to achieve the established AML. The population at 2020 on the most typical trial shows 424.

**Only 200 would be removed, but not possible to set the model for a specific number of removals during a specific gather event.

Conclusions

Proposed Action

The objectives of the Proposed Action include a helicopter gather initially to remove 200 young wild horses and treat all mares released to the range with PZP 22. Boosting and future treatment goals include the use of both bait and water trapping and helicopter gathers, as well as the use of darting of individual mares on the range. The population model shows that this plan would result in an average population over the course of the next 10 years of 409 wild horses without future removals (beyond 2015). Within future bait and water trapping or helicopter gathers, young adoptable horses could be selected for removal which would reduce the average population levels and the established AML range might be achieved. Though an intensive program of gathering, trapping and darting would be necessary, the model does not show substantial reductions in the population size over the 11 years, with the most typical trial reflecting a population of 324 by year 11 despite the model set to “gather” and treat 90% of the mares annually at a PZP effectiveness of 94%.

Alternative 1

This alternative is a standard gather and removal scenario with reduced removal numbers to reflect only removal of younger horses 4 years of age or younger. No fertility control is implemented. Though the average population is shown to be 364 horses, nearly 1000 wild horses must be removed over the 11 years to maintain that population level, which does not achieve the AML. The model was set to only reflect removal of younger horses. Therefore, if AML was to be achieved in any future gathers, several hundred more horses would have to be removed during any one gather. The model was set to only show removal of younger horses as a reasonable attempt to refrain from removing horses that might not be adoptable. Any future gathers under this Alternative could involve any age groups if needed to achieve management targets.

Alternative 2

This alternative does not include any removals of wild horses and uses fertility control only to control the population growth implemented through bait and water trapping and darting. The starting population is the current population (549 wild horses). The typical trial shows a slow reduction of the population from 623 (population after foaling 2015 and before the fertility control becomes effective) to 420 by year 11. Despite the low growth rates shown for the model, and “gather” and treat of 90% of the mares, the population reduction is slow, and AML is not achieved. In the process, a substantial number of mares would need to be treated annually to maintain the population reductions that are shown by the model.

No Action

This alternative does not reflect any management to control the population through removals or fertility control. The population steadily increases with average population sizes exceeding 1600 wild horses by year 9, which is likely much slower growth than what would actually happen due to what is known about population growth rates in the Battle Mountain District.

Population Modeling Graphs

Most Typical Trial Graphs

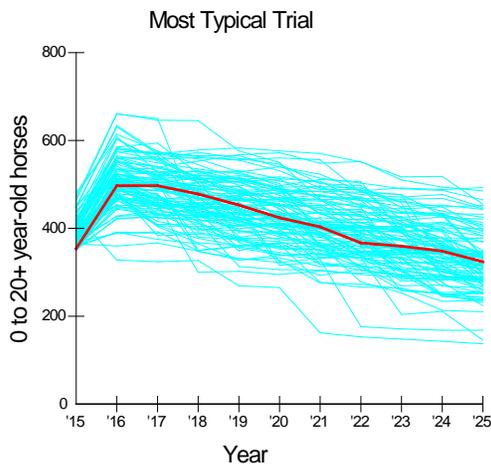


Figure 1: Proposed Action

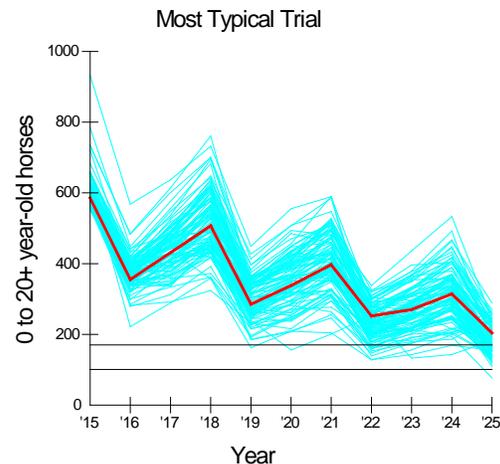


Figure 2: Alternative 1

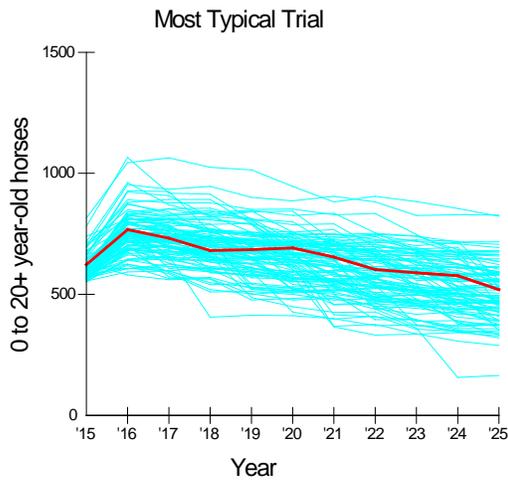


Figure 3: Alternative 2

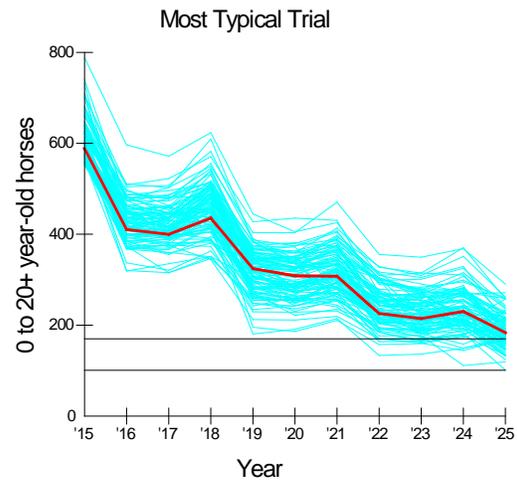


Figure 4: Alternative 3

Modeling Parameters

Table 10: Proposed Action Modeling Parameters

Age Percentages Class Treatment	Initial Base for Population		Survival Probabilities		Foaling Rates	Percentages of Removals		Fertility
	Females	Males	Females	Males		Females	Males	
Age Group								
foal	4	4	0.919	0.877	0.00	0%	0%	100%
1	3	3	0.996	0.950	0.00	0%	0%	100%
2	6	6	0.994	0.949	0.52	0%	0%	100%
3	29	25	0.993	0.947	0.67	0%	0%	100%
4	29	26	0.990	0.945	0.76	0%	0%	100%
5	21	19	0.988	0.942	0.89	0%	0%	100%
6	14	13	0.985	0.939	0.76	0%	0%	100%
7	13	12	0.981	0.936	0.90	0%	0%	100%
8	11	10	0.976	0.931	0.88	0%	0%	100%
9	13	12	0.971	0.926	0.91	0%	0%	100%
10-14	28	25	0.947	0.903	0.81	0%	0%	100%
15-19	17	16	0.870	0.830	0.82	0%	0%	100%
20+	11	10	0.591	0.564	0.75	0%	0%	100%

Sex ratio at birth: 58% males

Scaling factors for annual variation: survival probabilities = 1.00, foaling rates = 1.00

Correlation between annual variation in survival probabilities and foaling rates = 0.00

Management by fertility control only

Starting year is 2015

Gathering occurs at minimum interval of 1 years

Initial gather year is 2015

Gathers for fertility treatment occur regardless of population size.
 Gathers do not continue after removals to treat additional females.
 Threshold population size for gathers is 0.
 Foals are excluded from AML.
 Percent of population that can be gathered = 90%.
 Percent effectiveness of fertility control: year 1 is 94%, year 2 is 94%, year 3 is 94%, year 4 is 94%, year 5 is 94%.

Table 11: Alternative 1 Modeling Parameters

Age Percentages Class Treatment	Initial Base for Population		Survival Probabilities		Foaling Rates	Percentages of Removals		Fertility
	Females	Males	Females	Males		Females	Males	
foal	46	41	0.919	0.877	0.00	100%	100%	100%
1	34	30	0.996	0.950	0.00	100%	100%	100%
2	42	37	0.994	0.949	0.52	100%	100%	100%
3	45	39	0.993	0.947	0.67	100%	100%	100%
4	33	29	0.990	0.945	0.76	100%	100%	100%
5	23	21	0.988	0.942	0.89	0%	0%	100%
6	15	14	0.985	0.939	0.76	0%	0%	100%
7	14	13	0.981	0.936	0.90	0%	0%	100%
8	12	11	0.976	0.931	0.88	0%	0%	100%
9	15	13	0.971	0.926	0.91	0%	0%	100%
10-14	31	27	0.947	0.903	0.81	0%	0%	100%
15-19	19	18	0.870	0.830	0.82	0%	0%	100%
20+	13	11	0.591	0.564	0.75	0%	0%	100%

Sex ratio at birth: 58% males
 Scaling factors for annual variation: survival probabilities = 1.00, foaling rates = 1.00
 Correlation between annual variation in survival probabilities and foaling rates = 0.00

Management by removals only
 Starting year is 2015
 Gathering occurs at minimum interval of 3 years
 Initial gather year is 2015
 Threshold population size for gathers is 170.
 Target population size following removals is 101.
 Foals are excluded from AML.
 Percent of population that can be gathered = 90%.

Table 12: Alternative 2 Modeling Parameters

Age Percentages Class Treatment	Initial Base for Population		Survival Probabilities		Foaling Rates	Percentages of Removals		Fertility
	Females	Males	Females	Males		Females	Males	
Age Groups								
foal	47	42	0.919	0.877	0.00	0%	0%	100%
1	35	31	0.996	0.950	0.00	0%	0%	100%
2	43	38	0.994	0.949	0.52	0%	0%	100%
3	46	40	0.993	0.947	0.67	0%	0%	100%
4	34	30	0.990	0.945	0.76	0%	0%	100%
5	24	21	0.988	0.942	0.89	0%	0%	100%
6	16	14	0.985	0.939	0.76	0%	0%	100%
7	14	13	0.981	0.936	0.90	0%	0%	100%
8	13	11	0.976	0.931	0.88	0%	0%	100%
9	15	13	0.971	0.926	0.91	0%	0%	100%
10-14	31	28	0.947	0.903	0.81	0%	0%	100%
15-19	20	19	0.870	0.830	0.82	0%	0%	100%
20+	13	11	0.591	0.564	0.75	0%	0%	100%

Sex ratio at birth: 58% males

Scaling factors for annual variation: survival probabilities = 1.00, foaling rates = 1.00

Correlation between annual variation in survival probabilities and foaling rates = 0.00

Management by fertility control only

Starting year is 2015

Gathering occurs at minimum interval of 1 years

Initial gather year is 2015

Gathers for fertility treatment occur regardless of population size.

Gathers do not continue after removals to treat additional females.

Threshold population size for gathers is 0.

Foals are excluded from AML.

Percent of population that can be gathered = 90%.

Percent effectiveness of fertility control: year 1 is 94%, year 2 is 94%, year 3 is 94%, year 4 is 94%, year 5 is 94%.

Table 13: Alternative 3 Modeling Parameters

Age Percentages Class Treatment	Initial Base for Population		Survival Probabilities		Foaling Rates	Percentages of Removals		Fertility
	Females	Males	Females	Males		Females	Males	
Age Groups								
foal	40	36	0.919	0.877	0.00	100%	100%	100%
1	30	26	0.996	0.950	0.00	100%	100%	100%
2	37	33	0.994	0.949	0.52	100%	90%	100%
3	39	34	0.993	0.947	0.67	100%	90%	100%
4	29	26	0.990	0.945	0.76	0%	80%	100%
5	20	18	0.988	0.942	0.89	0%	0%	100%

Age Percentages Class Treatment	Initial Base for Population		Survival Probabilities		Foaling Rates	Percentages of Removals		Fertility
	Females	Males	Females	Males		Females	Males	
6	13	12	0.985	0.939	0.76	0%	0%	100%
7	12	11	0.981	0.936	0.90	0%	0%	100%
8	11	10	0.976	0.931	0.88	0%	0%	100%
9	13	11	0.971	0.926	0.91	0%	0%	100%
10-14	27	24	0.947	0.903	0.81	0%	0%	100%
15-19	17	16	0.870	0.830	0.82	0%	0%	100%
20+	10	10	0.591	0.564	0.75	0%	0%	100%

Sex ratio at birth: 58% males

Scaling factors for annual variation: survival probabilities = 1.00, foaling rates = 1.00

Correlation between annual variation in survival probabilities and foaling rates = 0.00

Management by removals and fertility control

Starting year is 2015

Gathering occurs at minimum interval of 3 years

Initial gather year is 2015

Gathers for fertility treatment only occur if population exceeds threshold.

Gathers continue after removals to treat additional females to be released.

Threshold population size for gathers is 170.

Target population size following removals is 101.

Foals are excluded from AML.

Percent of population that can be gathered = 90%.

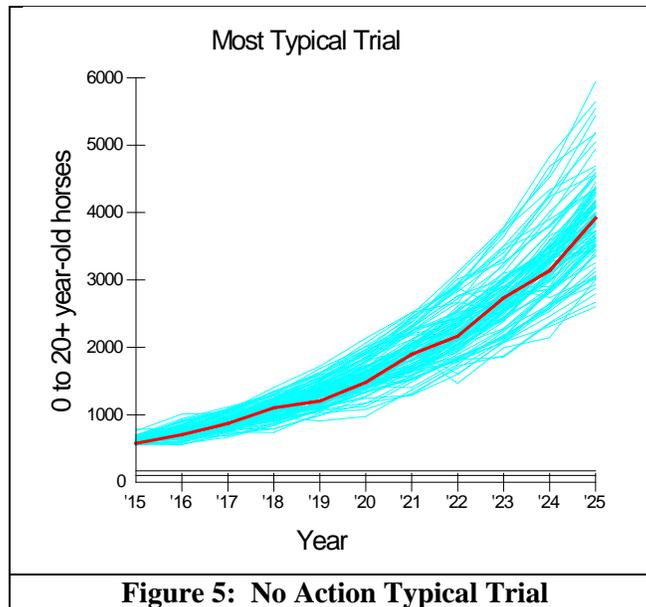
Percent effectiveness of fertility control: year 1 is 94%, year 2 is 82%, year 3 is 68%, year 4 is 94%, year 5 is 82%.

Table 14: No Action Modeling Parameters

Age Percentages Class Treatment	Initial Base for Population		Survival Probabilities		Foaling Rates
	Females	Males	Females	Males	
Age Groups	Females	Males	Females	Males	
foal	43	38	0.919	0.877	0.00
1	32	28	0.996	0.950	0.00
2	40	35	0.994	0.949	0.52
3	42	37	0.993	0.947	0.67
4	31	27	0.990	0.945	0.76
5	22	19	0.988	0.942	0.89
6	14	13	0.985	0.939	0.76
7	13	12	0.981	0.936	0.90
8	12	10	0.976	0.931	0.88
9	14	12	0.971	0.926	0.91
10-14	29	26	0.947	0.903	0.81
15-19	18	17	0.870	0.830	0.82
20+	12	11	0.591	0.564	0.75

Sex ratio at birth: 58% males
Scaling factors for annual variation: survival probabilities = 1.00, foaling rates = 1.00
Correlation between annual variation in survival probabilities and foaling rates = 0.00

No management
Starting year is 2015
Initial year is 2015
Foals are included in AML.



Appendix F: Daily Visitation Protocol and Ground Rules



Daily Visitation Protocol and Ground Rules for the Fish Creek HMA Wild Horse Gather



BLM recognizes and respects the right of interested members of the public and the press to observe the Fish Creek HMA wild horse gather. At the same time, BLM must ensure the health and safety of the public, BLM's employees and contractors, and America's wild horses. Accordingly, BLM developed these rules to maximize the opportunity for reasonable public access to the gather while ensuring that BLM's health and safety responsibilities are fulfilled. Failure to maintain safe distances from operations at the gather and temporary holding sites could result in members of the public inadvertently getting in the path of the wild horses or gather personnel, thereby placing themselves and others at risk, or causing stress and potential injury to the wild horses and burros.

The BLM and the contractor's helicopter pilot must comply with 14 CFR Part 91 of the Federal Aviation Regulations, which determines the minimum safe altitudes and distance people must be from the aircraft. To be in compliance with these regulations, the viewing location at the gather site and holding corrals must be approximately 500 feet from the operating location of the helicopter at all times. The viewing locations may vary depending on topography, terrain and other factors.

General Daily Protocol

- A Wild Horse Gather Info Phone Line will be set up prior to the gather so the public can call for daily updates on gather information and statistics. Visitors are strongly encouraged to check the phone line the evening before they plan to attend the gather to confirm the gather and their tour of it is indeed taking place the next day as scheduled (weather, mechanical issues or other things may affect this) and to confirm the meeting location.
- Visitors must direct their questions/comments to either their designated BLM representative or the BLM spokesperson on site, and not engage other BLM/contractor staff and disrupt their gather duties/responsibilities - professional and respectful behavior is expected of all. BLM may make the BLM staff available during down times for a Q&A session. However, the contractor and its staff will not be available to answer questions or interact with visitors.
- Observers must provide their own 4-wheel drive high clearance vehicle, appropriate shoes, winter clothing, food and water. Observers are prohibited from riding in government and contractor vehicles and equipment.
- Gather operations may be suspended if bad weather conditions create unsafe flying conditions.
- BLM will establish one or more observation areas, in the immediate area of the gather and holding sites, to which individuals will be directed. These areas will be placed so as to maximize the opportunity for public observation while providing for a safe and effective horse gather. The utilization of such observation areas is necessary due to the use and presence of heavy equipment and aircraft in the gather operation and the critical need to allow BLM personnel and contractors

to fully focus on attending to the needs of the wild horses and burros while maintaining a safe environment for all involved. In addition, observation areas will be sited so as to protect the wild horses from being spooked, startled or impacted in a manner that results in increased stress.

- BLM will delineate observation areas with yellow caution tape (or a similar type of tape or ribbon).
- Visitors will be assigned to a specific BLM representative and must stay with that person at all times.
- Visitors are NOT permitted to walk around the gather site or temporary holding facility unaccompanied by their BLM representative.
- Observers are prohibited from climbing/trespassing onto or in the trucks, equipment or corrals, which is the private property of the contractor.
- When BLM is using a helicopter or other heavy equipment in close proximity to a designated observation area, members of the public may be asked to stay by their vehicle for some time before being directed to an observation area once the use of the helicopter or the heavy machinery is complete.
- When given the signal that the helicopter is close to the gather site bringing horses in, visitors must sit down in areas specified by BLM representatives and must not move or talk as the horses are guided into the corral.
- Individuals attempting to move outside a designated observation area will be requested to move back to the designated area or to leave the site. Failure to do so may result in citation or arrest. It is important to stay within the designated observation area to safely observe the wild horse gather.
- Observers will be polite, professional and respectful to BLM managers and staff and the contractor/employees. Visitors who do not cooperate and follow the rules will be escorted off the gather site by BLM law enforcement personnel, and will be prohibited from participating in any subsequent observation days.
- BLM reserves the right to alter these rules based on changes in circumstances that may pose a risk to health, public safety or the safety of wild horses (such as weather, lightening, wildfire, etc.).

Public Outreach and Education Day-Specific Protocol

A public outreach and education day provides a more structured mechanism for interested members of the public to see the wild horse gather activities at a given site. On this day, BLM attempts to allow the public to get an overall sense of the gather process and has available staff who can answer questions that the public may have. The public rendezvous at a designated place and are escorted by BLM representatives to and from the gather site.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
<http://www.blm.gov>

July 22, 2010

In Reply Refer To:
4710 (260) P

EMS TRNASMISSION 07/23/2010
Instruction Memorandum No. 2010-164
Expires: 09/30/2011

To: All Field Officials (except Alaska)
From: Assistant Director, Renewable Resources and Planning
Subject: Public Observation of Wild Horse and Burro Gatherers

Program Area: Wild Horse and Burro Program

Purpose: The purpose of this Instruction Memorandum (IM) is to establish policy for public observation of wild horse and burro (WH&B) gathers.

Policy/Action: The Bureau of Land Management's (BLM's) policy is to accommodate public requests to observe a gather primarily through advance appointment, on days and at times scheduled by the authorized officer. Planning for one public observation day per week is suggested.

Specific viewing opportunities will be based on the availability of staff with the necessary expertise to safely and effectively host visitors, as well as other gather-specific considerations (e.g., weather, terrain, road access, landownership). The public should be advised that observation days are tentative and may change due to unforeseen circumstances (e.g., weather, wildfire, trap relocation, equipment repair, etc.). To ensure safety, the number of people allowed per observation day will be determined by the District Manager (DM) and/or Field Office Manager (FM) in consultation with the Contracting Officer's Representative/WH&B Specialist (COR) for the gather.

The DM/FM has the primary responsibility for effectively planning and managing public observation of the gather operation. Advance planning will:

- Ensure that the public have opportunities to safely observe wild horse gathers;
- Minimize the potential for disruption of the gather's execution;
- Maximize the safety of the animals, visitors, and the BLM and contractor personnel;
- Provide for successful management of visitors; and
- Ensure preparedness in the event of unanticipated situations.

The authorized officer will consider the following when planning for public observation of WH&B gather

operations. Also see Attachment 1 (Best Practices When Planning for Public Observation at Gathers).

A. Safety Requirements

During WH&B gathers, the safety of the animals, the BLM and contractor personnel, and the public is of paramount importance. Because of the inherent risk involved in working with WH&B, the public will not be allowed inside corrals or pens or be in direct contact with the animals. Viewing opportunities during the gather operation must always be maintained at a safe distance (e.g., when animals are being herded into or worked at the trap or temporary holding facility, including sorting, loading) to assure the safety of the animals, the BLM and contractor personnel, and the public.

Unless an emergency situation exists, the BLM's policy prohibits the transportation of members of the public in Government or Contractor-owned or leased vehicles or equipment. Therefore, observers are responsible for providing their own transportation to and from the gather site and assume all liability for such transportation.

The helicopter/aircraft is the private property of the gather contractor. Due to liability and safety concerns, Bureau policy prohibits observers from riding in or mounting cameras onto the aircraft. Should observers create unsafe flying and gathering conditions, for example, by hiring an aircraft to film or view a gather, the COR, in consultation with the gather contractor, will immediately cease gather operations.

The COR has the authority to stop the gather operation when the public engage in behavior that has the potential to result in harm or injury to the animals, employees, or other members of the public.

B. Planning for Public Observation at WH&B Gathers

During advance planning for public observation at WH&B gathers, the authorized officer should consult with the State External Affairs Chief or appropriate Public Affairs office. An internal communications plan will be developed for every gather (Attachment 2). It may also be helpful to prepare answers to frequently asked questions (Attachment 3).

C. Law Enforcement Plan

A separate Law Enforcement Plan should be developed if the need for law enforcement support is anticipated. The Law Enforcement Plan must be approved in advance by the Special Agent-In-Charge (SAC) or the State Staff Ranger of the State in which the gather is occurring.

D. Temporary Closure to Public Access

Under the authority of section 303(a) of the Federal Land Management and Policy Act (43 U.S.C. 1733(a)), 43 CFR 8360.0-7, and 43 CFR 8364.1, the authorized officer may temporarily close public lands within all or a portion of the proposed gather area to public access when necessary to protect the health and safety of the animals, the public, contractors and employees. Completion of a site-specific environmental analysis of the environmental impacts associated with the proposed closure and publication of a Federal Register Notice is required.

E. Gather Contract Pre-Work Conference

Talk to the contractor about how many members of the public are expected and when. Discuss, and reach mutual agreement, about where best to position the public at the individual trap-sites to allow the gather to be observed, while accomplishing the gather objectives and assuring the humane treatment of the animals and the

safety of the BLM and contractor personnel, and public.

- No deviation from the selected viewing location(s) should be made, unless the gather operation is being adversely impacted. The COR will consult with the gather contractor prior to making any changes in the selected viewing locations.
- The BLM's policy prohibits it from ferrying observers in the helicopter or any other mode of conveyance unless an emergency situation exists. Review this policy with the contractor during the pre-work conference.

F. Radio Communication

- Assure there is effective radio communication between law enforcement personnel, gather COR or project inspectors (PIs), and other BLM staff.
- Identify the radio frequencies to be used.
- Communication with the gather contractor is through the BLM COR or PI, and from the gather contractor to the helicopter pilot. Direct communication between BLM personnel (other than the COR) and the helicopter pilot is not permitted, unless agreed upon by the BLM authorized officer and the contractor in advance, or the pilot is requesting information from the COR.

G. Pre- and Post-Action Gather Briefings

- Pre-briefings conducted by knowledgeable and experienced BLM staff can be helpful to the public.
- The pre-gather briefing is an opportunity to explain what individuals will see, why the BLM is conducting the gather, how the animals will be handled, etc.
- Post-action briefings may also be helpful in interpreting and explaining what individuals saw, what happened, why certain actions were taken, etc.

H. Summary of Individual Roles and Responsibilities

1. District and/or Field Office Managers

DMs and/or FM's are responsible for keeping the State Director and State WH&B Lead fully informed about the gather operation. Included is working with State/local public affairs staff to prepare early alerts if needed. An additional responsibility is determining if a law enforcement presence is needed.

2. Public Affairs Staff

The local district/field office public affairs staff is responsible for working with the COR, DM/FM, other appropriate staff, the State WH&B Program Lead, and the State Office of Communications to implement the communications strategy regarding the gather.

3. Law Enforcement

Develop and execute the law enforcement plan in consultation with District/Field Office Managers, the COR/PI, and the State's Special Agent-In-Charge or State Staff Ranger.

4. Contracting Officer's Representative (COR)/Project Inspectors (PIs)

The COR and the PI's primary responsibility is to administer the contract and manage the gather. A key element of this responsibility is to assure the safe and humane handling of WH&B. The COR is also responsible for working closely with the DM/FM and Public Affairs Staff to develop the communication plan, and for maintaining a line of communication with State, District, and Field Office managers, staff and specialists on the progress of, and any issues related to, the gather operation.

Timeframe: This instruction memorandum is effective immediately.

Budget Impact: Higher labor costs will be incurred while accommodating increased interest from the public to

attend gather events. The budget impacts of unanticipated situations which can occur during WH&B gathers include substantial unplanned overtime and per diem expense. Through advance planning, necessary support staff can be identified (e.g., law enforcement, public affairs, or other BLM staff) and the cost-effectiveness of various options for providing staff support can be evaluated. In situations where public interest in a gather operation is greater than anticipated, the affected state should coordinate with the national program office and headquarters for assistance with personnel and funding.

Background: Heightened interest from the public to observe WH&B gathers has occurred. Advance planning for public observation of gather operations can minimize the potential for unanticipated situations to occur during WH&B gathers and assure the safety of the animals, the BLM and contractor personnel, and the public.

Manual/Handbook Sections Affected: No change or affect to the BLM manuals or handbooks is required.

Coordination: This IM was coordinated among WO-200 and WO-260 staff, State WH&B Program Leads, field WH&B Specialists, public affairs, and law enforcement staff in the field.

Contact: Questions concerning this policy should be directed to Susie Stokke in the Washington Office at (202) 912-7262 or Lili Thomas in the National Program Office at (775) 861-6457.

Signed by:
Bud C. Cribley
Acting, Assistant Director
Renewable Resources and Planning

Authenticated by:
Robert M. Williams
Division of IRM Governance,WO-560



July 2012, two horses near Brown Well.



July 2012, Water hauling at the McCullough Springs location.

Appendix G: Comprehensive Animal Welfare Policy

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

<http://www.blm.gov>

January 23, 2013

In Reply Refer To:
4710 (NV934) P

EMS TRANSMISSION 01/30/2013
Instruction Memorandum No. 2013-059
Expires: 09/30/2015

To: All Field Office Officials (except Alaska)

From: Assistant Director, Renewable Resources and Planning

Subject: Wild Horse and Burro Gathers: Comprehensive Animal Welfare Policy

Program Area: Wild Horse and Burro (WH&B) Program

Purpose: The purpose of this Instruction Memorandum (IM) is to establish policy and procedures to enable safe, efficient, and successful WH&B gather operations while ensuring humane care and treatment of all animals gathered.

Policy/Action: The Bureau of Land Management (BLM) is committed to the well-being and responsible care of WH&B we manage. At all times, the care and treatment provided by the BLM and our Contractors will be characterized by *compassion and concern* for the animal's well-being and welfare needs. Effective immediately, all State, District, and Field Offices must comply with this IM for all gathers within their jurisdiction.

This IM is part of a package of IMs covering various aspects of managing WH&B gathers.

- IM No. 2013-060, Wild Horse and Burro Gathers: Management by Incident Command System
- IM No. 2013-058, Wild Horse and Burro Gathers: Public and Media Management
- IM No. 2013-061, Wild Horse and Burro Gathers: Internal and External Communicating and Reporting

Roles and responsibilities of all gather personnel are covered in IM No. 2013-060, Wild Horse and Burro Gathers: Management by Incident Command System.

The goal of this IM is to ensure that the responsible and humane care treatment of WH&B remains a priority for the BLM and its Contractors at all times. Our objectives are to use the best available science, husbandry, and handling practices applicable for WH&B and to make improvements whenever and wherever possible, while meeting our overall gather goals and objectives in accordance with current BLM policy, standard operating procedures, and contract requirements.

The Lead Contracting Officer's Representative (Lead COR) is the primary party responsible for promptly addressing any actions that are inconsistent with the expectations set forth below. The Lead COR may delegate responsibility to an alternate COR. The responsibilities of a BLM Project Inspector are assigned by the Lead COR and are limited to performing on-the-job government inspection of work accomplished by the Contractor.

The Lead COR has authority to *suspend* gather operations if he/she believes actions contrary to the humane treatment expectations are taking place or that an unsafe condition exists. The Lead COR will promptly notify the Contractor if any improper or unsafe behavior or actions are observed, and will require that such behaviors be promptly rectified and eliminated. Any observed problems shall be reported at the end of each day. The Lead COR and Incident Commander (IC), through coordination with the Contracting Officer (CO) shall, if necessary, ensure that corrective action has been taken to prevent those behaviors or actions from occurring again and all follow-up and corrective actions shall be reported as a component of the Lead COR's daily reports.

Based on past experience with WH&B gathers and the need to adapt some gather practices to specific local conditions, the following information will be discussed with all gather personnel before gather operations begin and shall be incorporated as management's expectations that is included as an appendix to the documentation supporting the gather and made available on BLM's website. Humane care and handling of WH&B during gather operation is always the primary concern. During the pre-work conference facilitated by the Lead COR, expectations for the humane treatment and care of WH&B during gather operations will be discussed. They include the following expectations:

1. The Lead COR will ensure that the gather helicopter(s) will not be operated in a manner where, for any reason, the helicopter could reasonably be expected to come into contact with a WH&B. In cases when it is necessary during gather operations, hovering by the helicopter over the WH&B is acceptable.
2. Handling aids (including body position, voice, flags, paddles and electric prods) will be used in a manner that is consistent with domestic livestock handling procedures. Flags and paddles will be used as signaling and noise making devices first, with only light contact of the flag or paddle end allowed when necessary. Animals will not be whipped or beaten with these or any handling aids. Flagging and paddles will be used strategically and in a manner that avoids desensitizing the WH&B. While it may be necessary on occasion to use a hand or foot to safely move a WH&B, the Lead COR will ensure that kicking or hitting of WH&B does not occur.
3. Electric prods (hotshots) will not be routinely used on WH&B, but rather should only be used as a last resort when WH&B or human safety is in jeopardy or other aids have been tried and are not working. When used, electric prods will only be used to shock animals, not to tap or hit animals. Similarly, electric prods will not be applied to injured or young animals, nor will they be applied to sensitive areas such as the face, genitals, or anus.
4. Gates can be used to push WH&B but will not be used in a manner that may be expected to catch legs. Gates and doors will not be slammed or shut on WH&B.
5. Only the Lead COR will identify and request the Contractor to pursue and capture a single WH&B. Pursuing a single WH&B should be a rare event and not standard practice. If the animal is identified as a stud, further pursuit should be abandoned unless for management purposes (such as public safety, nuisance animals, or animals outside HMA boundaries or on private lands) it is necessary to capture the animal.
6. The Lead COR will ensure every effort is made to prevent foals from being left behind or orphaned in the field. If a foal has to be dropped from a group being brought to the trap because it is getting too tired or cannot keep up, the pilot will relay to the Lead COR and ground crew the location of the foal and a description of the mare to facilitate "pairing-up" at temporary holding. In this case, the Contractor will provide trucks/trailers and saddle horses for the retrieval of the foal and transport the foal to the gather site or temporary holding. If the helicopter is needed to locate and capture the foal, retrieval of the foal should occur prior to another band being located and driven to the trap. The method of capture will be directed by the Lead COR.

7. The Lead COR will ensure that if during the gather any WH&B (including foals or horses that may be aged, lame, injured or otherwise appear weak or debilitated) appear to be having difficulty keeping up with the group being brought in, the Contractor will accommodate the animals having difficulty to allow for rest before proceeding, drop those animals from the group, or drop the entire group. It is expected that animals may be tired, sweaty and breathing heavily on arrival at a trap, but they should not be herded in a manner that results in exhaustion or collapse.
8. The need to rope specific WH&B will be determined by the Lead COR on a case-by-case basis.
9. While gathering, a WH&B may escape or evade the gather site while being moved by the helicopter. If there are foals in the band and an animal that has evaded capture has been identified as a mare that might have one of these foals, the Contractor may make multiple attempts to move the mare by the helicopter to the gather site for capture prior to roping or other alternative for capture. In these instances, animal condition and fatigue will be evaluated by the Lead COR on a case-by-case basis to determine the number of attempts that can be made to capture the animal. Animals will not be pursued to a point of exhaustion or distress.
10. Mares and their dependent foals will be separated from other animals at the temporary holding facility and moved to a designated BLM preparation facility. The Lead COR will ensure that any foals that are not weaned and have been maintained with their mares at temporary holding will be transported with their mares to the BLM preparation facilities as soon as practical.
11. The Lead COR will ensure that all sorting, loading or unloading of WH&B will be performed during daylight hours.
12. All handling pens, including the gates leading to the alleyways, should be covered with a material which serves as a visual barrier (plywood, burlap, plastic snow fence, etc.) and should be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses. Perimeter panels on the holding corrals should be covered to a minimum height of 5 feet for burros and 6 feet for horses. Those panels attached to and leading directly into the trailers from the trap will be covered with a material which serves as a visual barrier. Padding should be installed on the overhead bars of all narrow gates used in single file alleys leading or leaving the squeeze chute set up. Screening will be placed on all division gates in the sorting area and solid fencing placed on panels from the working chute to the semi-trailers in an effort to decrease outside stimuli.
13. When dust conditions within or adjacent to the trap or holding facility so warrant, the Contractor shall be required to wet down the ground with water.
14. When possible (e.g., soil conditions allow) and as needed (e.g., the WH&B are unwilling to step up), the Lead COR should request that the Contractor will have the trailer floor at ground level to ease the loading of WH&B at the gather site.
15. If the pilot is moving WH&B and observes an animal that is clearly injured or suffering, the animal should be left on the range and its location noted. The BLM Lead COR with veterinary assistance from an Animal Plant Health Inspection Service or locally licensed veterinarian will then go to the identified location as promptly as possible so that any animal that cannot make it to the trap will be inspected to determine the problem. The Lead COR will then decide on the most appropriate course of action.
16. Injuries that required veterinary examination or treatment, deaths and spontaneous abortions that occur will be noted in gather reports and statistics kept by the Lead COR.
17. At the discretion of the Lead COR, if a WH&B is injured or in distress during gather operations and the animal is within the wings or first corral of the trap, gather operations may be temporarily suspended if necessary to provide care for the animal and subsequent removal. Such actions should take place prior to the trapping of additional animals whenever possible.

18. The Contractor shall provide animals held in facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Pens containing more than 50 animals will have water provided in at least two separate locations of the pen (i.e. opposite ends of the pen). Animals held for 10 hours or more in the traps or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. If the task order notes that weed free hay is to be used for this gather the Contractor will provide certified weed free hay in the amounts stated above. The Contractor will have to have documentation that the hay is certified weed free. An animal that is held at a temporary holding facility after 5:00 p.m. and on through the night, is defined as a WH&B 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.
19. When extreme environmental conditions exist (such as temperature) during a gather, the overall health and well-being of the animals will be monitored and the Lead COR will adjust gather operations as necessary to protect the animals from climatic and gather related health issues. The Lead COR should be equipped to take air temperatures periodically throughout the day to help with the monitoring of environmental conditions at the gather site. There may be days when the Lead COR determines that gather operations must be suspended or ceased based on temperatures or other environmental conditions.
20. The rate of movement and distance the animals travel shall not exceed limitations set by the Lead COR who will consider terrain, physical barriers, access limitations, weather, extreme temperature (high and low), condition of the animals, urgency of the operation (animals facing drought, starvation, fire rehabilitation, etc.) and other factors. In consultation with the Contractor, the distance the animals may travel will take into account the different factors listed above and other concerns relevant to individual HMAs. With foals, pregnant mares, or horses that are weakened by body condition, age or poor health, the appropriate herding distance and rate of movement will be determined on a case-by-case basis considering the weakest or smallest animal in the group and the range and environmental conditions present. The maximum gather distance will depend on the specific animal and environmental conditions on the day of the gather and direct dialogue with the pilot/ Contractor and Lead COR to provide important information as to numbers, number of foals, locations distance and/or overall animal and/ or environmental conditions. The trap locations will be moved closer to horse locations whenever possible to minimize the distance the animals need to travel.
21. The Lead COR or IC should be available to provide a short briefing to any members of the public that may be present at the end of daily operations, including the preliminary tallies on the total number of animals captured by sex, number of foals, and any incident that required medical attention or euthanasia. This briefing should occur at temporary holding corral after all animals have been sorted, fed and watered and allowed to settle. The public should be clearly informed that such preliminary tallies may change after all the information is processed from the day's gather and that the final results of the day's gather will be posted to the appropriate BLM website.
22. The Lead COR should ensure that holding alleys will not be overcrowded at temporary holding facilities. If there is a risk of overcrowding, gates should remain open to allow animals to move back out of the alley and be reloaded. If an animal falls in the alley no other animals should be moved through the alleyway until the animal stands on its own or the alleyway is clear.
23. The Lead COR should ensure that animals will not be left in alleyways for any extended period of time (greater than 30 minutes). If personnel are not present at the temporary holding corrals to sort animals, the horses should be placed into a holding pen until such time as they can be sorted and placed into the appropriate pen.
24. Bait/water trapping: All traps will be checked a minimum of once every 24 hours when the traps are "set" to capture without human presence (trip trigger traps, finger traps, etc.). All handling procedures outlined above in this document apply to bait trapping to the extent applicable.

Again, at all times, the care and treatment provided by the BLM and our Contractors should be characterized by *compassion and concern* for the animal's well-being and welfare needs. The IC will ensure that everyone involved in gather operations receives a copy of these expectations prior to the start of the gather and the Lead COR and all BLM employees present shall ensure that gather operations are conducted in compliance with these expectations.

Timeframe: This IM is effective immediately.

Budget Impact: Unit costs for conducting gathers as a result of this interim guidance are not expected to increase significantly when compared to existing costs.

Background: The BLM is committed to the humane treatment and care of WH&B through all of the phases of its WH&B program. To ensure a clearer statement of its expectations and greater consistency in the program, the development of a Comprehensive Animal Welfare Policy has been undertaken. In addition to the standard operating procedures (SOP) for capture operations, SOPs for management on the range, capture operations, short- and long-term holding facilities, transportation, and adoption will be developed.

Manual/Handbook Sections Affected: None

Coordination: This IM was coordinated among WO-200, WO-260, WO-600, WO-610, WO-LE, WH&B State Leads, WH&B Specialists, State External Affairs Leads, public affairs and law enforcement staff in the field.

Contact: Any questions regarding this IM can be directed to Joan Guilfoyle, Division Chief, Wild Horse and Burro Program (WO-260) at 202-912-7260.

Signed by: Authenticated by:
Edwin L. Roberson Robert M. Williams
Assistant Director Division of IRM Governance, WO-560
Renewable Resources and Planning

Appendix H: BLM Special Status Species

The following list has been reduced to those BLM special status species whose range or migration routes are known or believed to occur within the Fish Creek HMA.

<u>Scientific Name</u>	<u>Common Name</u>
Mammals	
<i>Antrozous pallidus</i>	Pallid Bat
<i>Brachylagus idahoensis</i>	Pygmy Rabbit
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat
<i>Eptesicus fuscus</i>	Big Brown Bat
<i>Idionycteris phyllotis</i>	Allen's Lappet-browed Bat
<i>Lasionycteris noctivagans</i>	Silver-haired Bat
<i>Lasiurus cinereus</i>	Hoary Bat
<i>Macrotus californicus</i>	California Leaf-nosed Bat
<i>Microdipodops megacephalus albiventer</i>	Desert Valley Kangaroo Mouse
<i>Microdipodops megacephalus nasutus</i>	Fletcher Dark Kangaroo Mouse
<i>Myotis californicus</i>	California Myotis
<i>Myotis ciliolabrum</i>	Small-footed Myotis
<i>Myotis evotis</i>	Long-eared Myotis
<i>Myotis lucifugus</i>	Little Brown Myotis
<i>Myotis thysanodes</i>	Fringed Myotis
<i>Myotis velifer</i>	Cave Myotis
<i>Myotis volans</i>	Long-legged Myotis
<i>Myotis yumanensis</i>	Yuma Myotis
<i>Nyctinomops macrotis</i>	Big Free-tailed Bat
<i>Ovis canadensis nelsoni</i>	Desert Bighorn Sheep ¹⁹
<i>Pipistrellus hesperus</i>	Western Pipistrelle Bat
<i>Sorex preblei</i>	Preble's Shrew
<i>Tadarida brasiliensis</i>	Brazilian Free-tailed Bat
<i>Thomomys bottae abstrusus</i>	Fish Spring Pocket Gopher ²⁰
Birds	
<i>Accipiter gentiles</i>	Northern Goshawk
<i>Aquila chrysaetos</i>	Golden Eagle
<i>Asio flammeus</i>	Short-eared Owl
<i>Asio otus</i>	Long-eared Owl
<i>Athene cunicularia</i>	Burrowing Owl
<i>Baeolophus griseus</i>	Juniper Titmouse
<i>Buteo regalis</i>	Ferruginous Hawk
<i>Buteo swainsoni</i>	Swainson's Hawk
<i>Centrocercus urophasianus</i>	Greater Sage-grouse
<i>Charadrius alexandrinus</i>	Snowy Plover
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo ²¹
<i>Falco mexicanus</i>	Prairie Falcon

¹⁹ Historic resident in Antelope Range

²⁰ Type specimens found on private Fish Creek Ranch in 1950s. No additional information has been recorded since type specimen(s) collected.

<i>Gymnorhinus cyanocephalus</i>	Pinyon Jay
<i>Haliaeetus leucocephalus</i>	Bald Eagle
<i>Icteria virens</i>	Yellow-breasted Chat
<i>Ixobrychus exilis</i>	Least Bittern
<i>Lanius ludovicianus</i>	Loggerhead Shrike
<i>Melanerpes lewis</i>	Lewis's Woodpecker
<i>Numenius americanus</i>	Long-billed Curlew
<i>Otus flammeolus</i>	Flammulated Owl
<i>Poocetes gramineus</i>	Vesper Sparrow
<i>Sphyrapicus nuchalis</i>	Red-naped Sapsucker

Amphibians

<i>Rana pipiens</i>	Northern Leopard Frog
---------------------	-----------------------

Fishes

<i>Gila bicolor euchila</i>	Fish Creek Springs Tui Chub
-----------------------------	-----------------------------

Plants

<i>Phacelia minutissima</i>	least phacelia; dwarf phaceli
-----------------------------	-------------------------------



Pronghorn antelope, mule deer and elk have all been identified at the water haul locations within the Fish Creek HMA since 2012.