

DECISION RECORD

EA Log No: DOI-BLM-OR-L050-2009-0065-EA
Applicant: Bureau of Land Management
Address: 1301 South G Street
Lakeview, OR 97630
County: Lake
BLM Office: Lakeview District

Decision:

The following is the decision of the Bureau:

The decision will be implemented in two parts:

- 1) The first part will describe actions effective upon issuance
- 2) The second part will describe Future Actions

1) Actions Effective Upon Issuance:

It is my decision to implement the following actions described in environmental assessment (EA) number DOI-BLM-OR-L050-2009-0066-EA. Implementation of these actions shall be effective immediately upon signature of this decision record.

A total of about 163 excess wild horses will be gathered from within and outside the Lakeview Resource Area's Paisley Desert Herd Management Area (HMA). Approximately 30 males and 30 females will be maintained in the HMA to reach low Appropriate Management Level (AML) of 60 wild horses. Mares returned to the HMA would be treated with the porcine zona pellucidae (PZP) vaccine prior to being released back to the range. Approximately 20-30 mares would receive PZP.

Rationale:

The selected population control actions are necessary to maintain wild horse population size within AML and to achieve a thriving ecological balance. Removal of the excess wild horses will restore a balance between the vegetation resource and its use by wild horses, livestock and wildlife and will prevent resource deterioration within the Paisley Desert HMA. Current monitoring data (Appendix H) shows that an excess of wild horses exists and that the excess horses are presently within and outside of the HMA and need to be removed immediately.

Fertility control will be applied to breeding age mares released back to the HMA post-gather. The objective of fertility control application is to slow future herd growth rates, extend the gather cycle, and reduce the number of excess horses which would potentially need to be removed and placed in short or long-term holding during future gathers.

Authority:

Authority for this decision is found in the Wild and Free Roaming Horses and Burros Act of 1971 (Public Law 92-195 as amended and Title 43 Code of Federal Regulations (CFR) part 4700 including 43CFR4720.1, 43 CFR 4710.3-1 and 4710.4. The authority to provide that all or part of a decision be effective upon issuance is found in 43CFR 4770.3(c).

2) Future Actions:

It is also my decision to implement the following actions over the next 10 year period, during future gathers of the Paisley Desert HMA. These actions are described in environmental assessment (EA) number DOI-BLM-OR-L050-2009-0066-EA.

Excess wild horses would be gathered in the future when, upon examination of current information and a determination by the authorized officer that an excess of wild horses exists. This analysis will include review of population inventory data together with resource monitoring or other data that supports the conclusion that an excess of wild horses exists and removal of these horses is necessary to maintain a thriving natural ecological balance and multiple use relationship in the area, and prevent resource deterioration.

If population inventory indicates an average herd growth rate greater than 10% following the December 2009 gather, additional population controls will be implemented during future gathers. These may include: adjusting the ratio of males to females to approximately 60/40 and returning geldings to the HMA as part of the male component, in combination with treatment of all breeding age mares released back to the range with PZP to further slow future population growth.

Rationale:

Wild horses have few natural means of population control. Monitoring data collected over the past years shows that the Paisley Desert herd grows at an average of 20% and doubles in numbers at least every 4 years. Management actions to slow herd growth rates, extend the gather cycle, and reduce the number of excess wild horses which must be removed are necessary to reduce disturbance to individual wild horses and the herd, and to maintain a thriving natural ecological balance and multiple use relationship in the area, and prevent resource deterioration.

Implementation of these actions would enable the Lakeview Resource Area to maintain a 5 year gather cycle, as described in the Lakeview Resource Management Plan and Record of Decision (RMP/ROD), 2003.

Authority:

Authority for the future action decisions are found in the Wild and Free Roaming Horses and Burros Act of 1971 (Public Law 92-195 as amended and Title 43 Code of Federal Regulations (CFR) part 4700 including 43CFR4720.1, 43 CFR 4710.3-1 and 4710.4.

Decision Summary:

All management actions described in this decision record are in conformance with the Lakeview RMP/ROD, 2003 and the Paisley Desert Herd Area Management Plan (HMAP). The environmental impacts of the Action alternatives and the No Action alternative have been analyzed in EA Number DOI-BLM-OR-L050-2009-0066-EA, as well as the previous EAs referenced within the current EA.

The temporary actions described in the above EA as well as the clarifications in the referenced EAs would not conflict with the pending RMP settlement agreement between the BLM and Oregon Natural Desert Association and would not impact wilderness character.

As stated in the EA, population inventory, analysis of grazing utilization, trend in range conditions, actual use and observational data will determine when future management actions would occur.

All alternatives considered have the ability to reduce populations of wild horses except for the No Action alternative. The alternatives may need to be used in combination to extend the time period between gathers and reduce the number of excess horses which would need to be gathered or removed over time.



Thomas E Rasmussen
Field Manager

Date 11/17/09

**United States Department of the Interior, Bureau of Land Management
Lakeview District Office**

**FINDING OF NO SIGNIFICANT IMPACT
Paisley Desert Herd Management Area
Wild Horse Population Control and Gather
Environmental Assessment
DOI-BLM-OR-LO50-2009-0066-EA**

INTRODUCTION

The Paisley Desert Herd Management Area Wild Horse Population Control and Gather Environmental Assessment (DOI-BLM-OR-LO50-2009-0066-EA) was completed to analyze the impacts of several population control alternatives for wild horses including gathering of excess horses within the boundaries of the Paisley Desert Herd Management Area (HMA) and any wild horses immediately outside or adjacent to the HMA. The current population of wild horses within the gather area is estimated to be 206 animals. The Appropriate Management Level (AML) for the herd is 60-150 wild horses. AML for the Paisley Desert Herd Management Area (HMA) has been previously established based on monitoring data and following a thorough public review. Documents containing this information are available for public review at the Lakeview District Office.

SUMMARY OF THE ACTIONs

The alternatives consider gather, immunocontraception, adjusting male to female sex ratio, including gelding to reduce population growth of wild horses from the Paisley Desert HMA. Alternatives would include determining sex, age and color, acquiring blood samples, assessing herd health pregnancy/parasite loading/physical condition/etc.), monitoring results as appropriate, sorting individuals as to age, size, sex, temperament and/or physical condition, and returning selected animals, primarily in the 6 to 10-year age group. This would ensure a vigorous and viable breeding population, reduce stress on vegetative communities and wildlife, and be in compliance with the Wild Free-Roaming Horse and Burro Act of 1971 and land use plans.

FINDING OF NO SIGNIFICANT IMPACT

Consideration of the Council on Environmental Quality (CEQ) criteria for significance (40 CFR 1508.27), both with regard to context and intensity of impacts, is described below:

Context

The affected region is limited to portions of Lake County, where the project area is located. The area is located 15 miles south of Christmas Valley, Oregon and 55 miles northwest of Lakeview, Oregon.

Intensity

Based on my review of the EA against the succeeding CEQ's ten considerations for evaluating intensity (severity of effect), there is no evidence that the severity of impacts is significant:

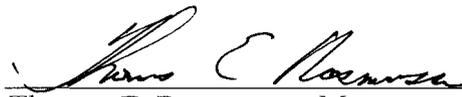
1. *Impacts that may be both beneficial and adverse.* The proposed actions are expected to meet BLM's resource objective for wild horse management of maintaining a thriving natural ecological balance consistent with other multiple uses. Although the gathering and removal of excess wild horses is expected to have short-term impacts on individual animals, it is expected to ensure the long-term viability of the wild horse herds and help to improve forage and habitat conditions in the herd management areas.
2. *The degree to which the proposed action affects public health or safety.* The proposed action alternatives have no effect on public health or safety.
3. *Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.* The proposed action alternatives have no potential to affect unique characteristics such as historic or cultural resources or properties of concern to Native Americans or affected ecologically critical areas. There are no wild and scenic rivers, present. Maintenance of appropriate numbers of wild horses is expected to help make progress in meeting resource objectives for improved wetland and terrestrial habitat.
4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.* Effects of the various actions are well known and understood. No unresolved issues have been raised.
5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.* The proposed action alternatives include measures for monitoring effectiveness on herd population dynamics and toward meeting multiple use objectives for rangeland health throughout the herd management areas.
6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.* The actions would not establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration.
7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.* The EA includes an analysis of cumulative effects which considers past, present and reasonably foreseeable future actions in the Paisley Desert HMA that supports the conclusion that the action alternatives are not related to other actions with individually insignificant but cumulatively significant impacts.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.* The action alternatives have no potential to adversely affect significant scientific, cultural, or historical resources.
9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.* The actions are not likely to adversely affect any listed species, and the action area does not include any habitat determined to be critical under the Endangered Species Act.
10. *Whether the action threatens a violation of Federal, State, local or tribal law or requirements imposed for the protection of the environment.* The proposed gather conforms to the approved 2003 Lakeview Resource Management Plan (RMP). Further the proposed gather is consistent with other Federal, State, local and tribal requirements for protection of the environment to the maximum extent possible.

On the basis of the information contained in the EA and all other information available to me, it is my determination that:

- 1) The implementation none of the Alternatives would not have significant environmental impacts beyond those already addressed in the Lakeview PRMP/FEIS (2003);
- 2) The Proposed Action or the No Action Alternative is in conformance with the Lakeview Resource Management Plan (2003);
- 3) There would be no adverse societal or regional impacts and no adverse impacts to affected interests; and
- 4) The environmental effects against the tests of significance found at 40 CFR 1508.27 do not constitute a major Federal action having a significant effect on the human environment.

Therefore, an EIS is not necessary and will not be prepared.



Thomas E. Rasmussen, Manager
Lakeview Resource Area

9/16/09

Date

**PAISLEY DESERT HERD
MANAGEMENT AREA
Wild Horse Population
Control and Gather**

**ENVIRONMENTAL ASSESSMENT
DOI-BLM-OR-L050-2009-0066-EA**

**Bureau of Land Management
Lakeview District Office
1301 South G Street
Lakeview, Oregon 97630**

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Appendix A - Standard Operating Procedures (Gather Operation)

Appendix B - Standard Operating Procedures (Fertility Control Treatment)

Appendix C - Euthanasia Policy

Appendix D - Selective Removal Criteria

Appendix E- Population Model Results

Appendix F- Genetic Analysis of Paisley Desert & Four other Oregon HMAs

Appendix G- Paisley Desert Herd Management Area Plan (HMAP)

Appendix H- Monitoring Summary

CHAPTER I: INTRODUCTION - PURPOSE OF AND NEED FOR ACTION

A. Introduction

Purpose and Need

There are two main purposes for management of horses in the Paisley Desert Herd Management Area (HMA).

- 1) Population Control
- 2) Maintain wild horses within the existing boundaries of the HMA and provide adequate habitat conditions within the guidelines of the Paisley Desert Herd Management Area Plan (PDHMAP).

The Paisley Desert HMA was last gathered in November of 2003. The Paisley Desert HMA consists of 297,802 acres of federal land with some intermixed, unfenced privately owned land. The area is located 15 miles southeast of Christmas Valley, Oregon and 55 miles northwest of Lakeview, Oregon.

The Lakeview District Bureau of Land Management (BLM) proposes to analyze and administer multiple options for the purpose of population control of wild horses over a ten year time frame. The ten year timeframe was considered a reasonable timeframe to consider population management because populations would not be managed with one gather. A realistic comparison of wild horse populations has the greatest impacts when viewed over time. A onetime management action such as gathering, administering porcine zona pellucidae (PZP) or changing the ratio of males to females results in a short time comparison (one year) view of alternatives. This short time analysis would be expected to show minor insignificant difference between the alternatives. For example a small 2% reduction in population growth to 13% in a single year would indicate a 5 horse difference in population numbers between the alternatives. The same 2% reduction in population growth attributed to management alternatives to show a 39 horse difference between the alternatives over a 10 year time frame.

The purpose of population control is first to achieve AML and then to maintain a wild horse AML which reflects the normal thriving ecological balance, collect information on herd characteristics, determine herd health, maintain sustainable rangelands, and maintain a healthy and viable wild horse population.

The need for gathering and population control techniques is to maintain a thriving ecological balance and prevent deterioration of the range. As the HMA becomes over populated gathering and removal of excess wild horses within and outside the HMA, fertility control treatments and other population controls would be implemented to prevent resource damage. The decision to gather or implement population controls would be affirmed where it is based on analysis of grazing utilizations, trend in range condition, actual use and observational data demonstrating that an excess of wild horses exists. Maintaining the herd at the prescribed levels in the Lakeview Resource Management Plan, 2003 would meet the management objective described above as well as the HMAP objectives described in the PDHMAP. A copy of the PDHMAP is provided in Appendix G.

There is an additional need to maintain wild horses within the existing boundaries of the HMA and to provide adequate habitat for wild horses within the boundaries of the HMA. Horses tend to drift outside the HMA into nearby crested wheatgrass seedings. This is potentially dangerous for horses if well and pipeline water is turned off after livestock are removed, thereby trapping horses without water. There has been a history of water shortage for wild horses during drought years and in the future range improvements may be installed to provide additional water within the HMA boundaries and to strengthen boundaries. Horses also tend to drift west of the HMA into the Diablo Rim area where they compete with bighorn sheep for available forage and water.

This Environmental Analysis (EA) contains the site specific analysis of potential impacts that could result with the implementation of the action alternatives or the no action alternative. Based on the following analysis, a determination would be made whether to prepare an Environmental Impact Statement (EIS) or issue a Finding of No Significant Impact (FONSI). A FONSI would document that implementation of the alternatives would not result in impacts that significantly affect the quality of the human environment.

The WinEquus Wild Horse Population Model Version 1.2, April 2002, developed by Dr. Steve Jenkins, Associate Professor, University of Nevada Reno, will be used to analyze wild horse populations under the various alternatives.

B. Public Involvement Opportunities

This environmental assessment (EA# DOI-BLM-OR-L050-2009-0066-EA) and finding of no significant impact (FONSI) for the proposed actions was prepared and sent out to agencies, tribal governments, groups and individuals for comment in early September of 2009. Four comment letters were received during the public review period. Three interested parties and individuals who commented on the EA were sent a letter responding to comments along with a copy of the record of decision. One comment letter did not provide a return address and therefore did not receive a written response. Minor edits were made to this EA to clarify questions raised during the public review. These edits do not significantly alter the analysis.

C. Comments and Issues Raised During Public Review

A list of the comments and issues that were raised during the public review opportunities (described above) are summarized below. Issues or concerns are addressed as appropriate through clarifications in the EA including additional appendices. However, some of the issues or concerns do not require a response (i.e. those comments that express a preference for one alternative over another) or are not applicable to the proposed actions, or are outside the scope of this EA. Issues raised and the BLM response is provided in the following section:

Comments

All four comment letters were similar in nature as follows:

The comments indicated that, in their opinion, wild horses were not the issue and that cattle grazing should be the focus and/or cattle grazing should be eliminated or reduced instead of horses. A similar concern was that large acreage had been taken away from horses and given to

cattle. *Response:* The AML for wild horses as well as the livestock forage allocations were established with the Lakeview Resource Management Plan and Record of Decision (RMP/ROD), 2003, and those decisions are not being reconsidered in this EA. The purpose of this EA is to consider the wild horse aspect of this area and adopt a population and management plan for the wild horses within the guidelines of current planning documents. The livestock grazing and wild horse affected environment sections of this EA were updated to clarify that the majority of livestock pastures are rested for at least one year following grazing and some pastures are rested for two years. Both livestock grazing and wild horse use are authorized within the boundaries of the HMA. The affected environment section was also updated to show that the Diablo Rim area has not had any authorized livestock use since 1992. Refer to pages 17&18 of the EA. Another comment was that 44 horses are not enough over AML to be excess and that proposed actions are not in compliance with the Wild Free Roaming Horses and Burros Act. *Response:* Please refer to the definition of excess provided on page 8 and to Section 2(f) of Public Law 92-195 which is commonly referred to as The Wild Free Roaming Horses and Burros Act. Comments suggested that the actions, selected age group for retention, and AML would put horses below genetic viability. *Response:* Please refer to the population record provided on page 3, and Management Objective 3 on page 5 of Appendix G. These references indicate that the herd is viable and would not be in danger of extinction. The population record indicates that horses from other Oregon herds have been introduced into the Paisley Desert population and would be in the future if necessary. In addition the Genetic Analysis of the Paisley Desert HMA written by E. Gus Cothran is provided in Appendix F which indicates the herd should not be in jeopardy of extinction in the near future, i.e. 20 years. Cothran did recommend that the herd should be closely monitored. The Lakeview BLM has monitored the herd and occasionally introduced horses from other Oregon Herds. Please refer to Appendix D, Selective Removal Criteria IM 2005-206 for Washington Office guidance on selection and removal of wild horses.

D. Conformance with Existing Land Use Plans and NEPA Documents

The project and actions described within the alternatives have been analyzed for conformance with one or more of the existing BLM plans and NEPA documents. Significant discrepancies, if any, are discussed in the attached EA.

Population control of wild horses is in conformance with Lakeview Resource Management Plan (RMP; 2003), as maintained. The Lakeview RMP, which constitutes the land use plan for Lakeview Resource Area, stresses the prevention of excess horse utilization of vegetative resources. Applicable sections from this plan are pages 55-56, 70-72, and Appendix E (pages A-8 and A-99) of the Lakeview RMP.

Oregon Wilderness Final Environmental Impact Statement and Record of Decision (1989 and 1991) Volume II, pages 243-318 and Volume III pages 395-426

Wilderness Interim Management Policy (1995)

Supplement to the Northwest Area Noxious Weed Control Program FEIS and ROD (1987)

Integrated Noxious Weed Control Program EA (2004)

Rangeland Reform '94 EIS Record of Decision (1995)

Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington (1997)

Greater Sage-Grouse Conservation Strategy and Assessment for Oregon (2005)

The following Environmental Assessments (EAs) are significant to population control and/or gathering of wild horses:

EA# OR-010-2004-09 Temporary Wild Horse Traps and Holding Facilities within Wilderness Study Areas Environmental Analysis

EA#OR-010-2000-01 Lakeview District Programmatic Wild Horse Fertility Control

EA#OR-010-1995-10 Lakeview District Programmatic Wild Horse Gather which includes synopsis of the previous 8 EAs prepared for wild horse gathers in the Lakeview District.

E. Relationship to Statutes, Regulations

Actions described are governed by the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law (PL) 92-195 as amended) and Title 43 Code of Federal Regulations (CFR) part 4700. Gathering and disposal of the wild horses would be in accordance with PL 92-195 as amended by PL 94-579 (Federal Land Policy and Management Act (FLPMA)) and PL 95-514 (Public Rangelands Improvement Act). Section 302(b) of FLPMA, states "all public lands are to be managed so as to prevent unnecessary or undue degradation of the lands."

The following are excerpts from the CFR:

- 1) 43 CFR 4720.1 - "Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately."
- 2) 43 CFR 4710.3-1 - "Herd Management Areas shall be established for maintenance of wild horse and burro herds."
- 3) 43 CFR 4710.4- "Management of wild horses and burros shall be undertaken with the objective of limiting the animals' distribution to herd areas. Management shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management area plans."
- 4) 43 CFR 4180.2(b) - "Standards and guidelines must provide for conformance with the fundamentals of 4180.1."

CHAPTER II: ALTERNATIVES

The proposed actions and alternatives represent a reasonable range of alternatives based on the issues and goals identified.

A. Assumptions Common to Alternatives

The timeframe for comparison of alternative impacts is 10 years. The timeframe for cumulative impact analysis is the same 20-year implementation timeframe associated with the Lakeview RMP/ROD.

Population numbers are approximate and actions will attempt to be as close to the actual numbers as feasible.

With all alternatives the base population of wild horses within and outside the HMA as of July 2009 is 223 horses including 188 adults and 35 foals.

B. Management Actions Common to all Action Alternatives 1-3

Under all action alternatives, excess horses straying outside the HMA and those not selected to be retained, would be removed and placed in the adoption, sale, or long term holding programs.

With the exception of emergencies, gathers would occur outside the foaling season of March through July.

The standard operating procedures (SOPs) for gathers identified in Appendix A would be followed for all gathers. The euthanasia policy described in Appendix C would be followed if euthanasia becomes necessary.

C. Alternative 1: Remove Excess Horses and Administer Fertility Control

The proposed action is to capture wild horses (85% of the population) in the HMA and all excess horses outside the Paisley Desert HMA (See Location Map 1 and HMA Map 2).

60 wild horses (30 mares and 30 studs) would be maintained in the HMA at completion of the gather, leaving a post gather population of 60 horses. Approximately 15-30 mares would be treated with the porcine zona pellucidae (PZP) vaccine prior to being released back to the range. Appendix B describes the standard operating procedures (SOPs) for administering PZP. This alternative would include determining sex, age and color, assessing herd health (pregnancy/parasite loading/physical condition/etc.), monitoring results as appropriate, sorting individuals as to age, size, sex, temperament and/or physical condition, and returning selected animals, primarily in the 6 to 10-year age group. This would ensure a vigorous and viable breeding population, reduce stress on vegetative communities and wildlife, and be in compliance with the Wild Free-Roaming Horses and Burros Act of 1971 and land use plans. Under this alternative, the first gather would occur in the late fall/winter 2009/2010 or soon thereafter. Subsequent gathers would occur when horse population levels return to a number above AML in which an excess determination is made. The decision to gather or implement population controls

would be affirmed where it is based on analysis of grazing utilizations, trend in range condition, actual use and observational data demonstrating that an excess of wild horses exists. Maintaining the herd at the prescribed levels in the Lakeview Resource Management Plan, 2003 would meet the management objective described above as well as the HMAP objectives described in the PDHMAP. A copy of the PDHMAP is provided in Appendix G. Gathering would also occur if emergency situations, mainly lack of water, occur that would be life threatening for the wild horses.

It is anticipated that approximately 2-10 capture sites (traps) may be used to capture wild horses from the HMA. Capture sites are selected by the contractor during gather operations. Some capture sites would be placed inside of WSA, using existing roads and previously disturbed sites. Normally capture sites would be located within the WSA only if horse locations are near or within the WSA and there is no other reasonable access. Traps and holding facilities would be placed adjacent the main access roads of 6134-0-A0 or 6144-0-00. EA-OR-010-2004-09 analyzes the potential effects of placing traps and holding facilities in WSAs and is applicable to all alternatives which require gathering. Traps would typically be approximately 800 square feet in size. Trap wing configuration will vary, depending on terrain and materials. A holding facility of approximately 2,000 square feet will be constructed to keep horse until they can be returned to the HMA or transported to adoption, sale or long term holding facilities. Holding facilities are normally located near existing roads or on previously disturbed sites. Locations are near water and available for ease of access by large semi truck and vehicles. Trap sites will be selected during the gather. Holding facilities and trap locations are normally placed adjacent to existing roads and trail within 10 miles of horse locations. All methods of gathering would be considered and the most efficient, but least impacting to horses would be used. Analysis of the types of gathering including hazing with helicopters, bait trapping and roping are described in EA OR-010-95-10 and not repeated in this analysis. Capture techniques are also described in Appendix A. The majority of gather operations would use a helicopter to drive horses to a trap. All capture and handling activities, including capture site selections, conducted in accordance with SOPs described in Appendix A.

Selection of capture techniques would be based on several factors such as herd health, season of the year, and environmental considerations. Horses are typically herded across country and into the traps utilizing a helicopter, which reduces herding time, and thereby reduces stress and potential injury for the wild horses. A decoy horse is often placed at the entrance to the trap to lure the wild horses into the mouth of the trap. Mounted wranglers are utilized to retrieve abandoned foals and occasionally herd stragglers into the trap. Once captured, the wild horses are loaded into gooseneck stock trailers and transported to a holding facility, where horses are sorted and selected for herd retention or transported for preparation for adoption. Determination of which horses would be returned to the range would be based on an analysis of existing population characteristics.

D. Alternative 2 Remove Excess Wild Horses – No Fertility Treatment

Alternative 2 would be the same as the alternative 1, except that mares would not be treated with PZP. Initially extra horses would be gathered to allow selection or animals returned to the HMA. All excess horses would be placed in the adoption or sale programs as described. This

alternative would include determining sex, age and color, assessing herd health (pregnancy/parasite loading/physical condition/etc.), monitoring results as appropriate, sorting individuals as to age, size, sex, temperament and/or physical condition, and returning selected animals, primarily in the 6 to 10-year age group. This would ensure a vigorous and viable breeding population, reduce stress on vegetative communities and wildlife, and be in compliance with the Wild Free-Roaming Horses and Burros Act of 1971 and land use plans.

E. Alternative 3 Remove Excess wild Horses –Adjust Sex Ratio in Favor of Males

This alternative would be the same as alternative 2 except that the ratio of studs to mares would be adjusted to 60/40 and one hundred horses would be returned to the HMA. Sixty would be males and 40 would be mares. Under this alternative gelding of up to 50% of studs would be done prior to their release back to the HMA.

F. Alternative 4 (No Action)

Under this alternative, wild horses would not be removed from the Paisley Desert HMA during the 10 year timeframe of this analysis. The existing population would continue to increase at approximately 20 percent per year, until the 2019 population is approximately 1935 horses.

G. Alternatives Considered but Eliminated from Further Analysis

One alternative considered was wild horse management using fertility control measures only to regulate wild horse populations. Periodic capture operations would be required to administer the vaccine to mares, or suitable remote delivery methods would need to be developed. This alternative was eliminated because effective remote delivery methodology (aerial or water based) has not been developed for current formulations.

Closure of the area to livestock use, or reduction of permitted use, was eliminated from consideration since it would not meet existing law, regulation, policy, nor concur with previous land use plan decisions. The Wild Free-Roaming Horse and Burro Act of 1971 does not require that these areas of public lands be managed for wild horses but states under Section 2a (Act) that even in case of ranges that are devoted principally for wild horse management, it is not necessary to devote these lands exclusively to their welfare in keeping with multiple-use management concept for public lands, but rather that these determinations be made through the land use plans.

A complete gather of 100% of the herd was eliminated from consideration because it is infeasible to gather all horses in an HMA this size which has limited road access. Most often horses that are trap wise, very young, elderly, injured, or in poor health would not make it to the trap site. Potentially the remaining horses could be roped at high expense to the government and added time to the contract; however this alternative is mainly infeasible and cost prohibitive.

An alternative to strengthen boundaries with additional fencing was considered to reduce or prevent drifting to the east into crested wheatgrass seedings, to the west into Diablo WSA and north outside the HMA. Although drifting has been a continual problem a more positive approach of providing reliable water inside the HMA boundaries may be effective without

fencing. To effectively strengthen HMA boundaries 11 miles of fence on the Southeastern boundary, 18 miles on the southwestern boundary and 6 miles on the northern boundary. Because of the high cost and amount of fence required; this alternative was eliminated from consideration at this time and for the 10 year timeframe of this EA. There may be a need to reconsider this option at a later date if drift problems continue.

CHAPTER III: AFFECTED ENVIRONMENT

A. Critical Elements

Critical Element	Present	Affected	Rationale
Areas of Critical Environmental Concern	YES	NO	
Air Quality	YES	NO	Areas of disturbance would be small, temporary and considered normal for the high desert.
Cultural, Paleontological, and American Indian Religious Concerns/Resources	YES	NO	See Narrative
Environmental Justice	NO	NO	Not Present
Prime or Unique Farmlands	NO	NO	Not Present
Floodplains	NO	NO	Not Present
Noxious Weeds	YES	NO	See Narrative
Special Status Species (Plant)	YES	NO	See Narrative and SOPs
Special Status Species (Animal)	YES	NO	See Narrative and SOPs
Migratory Birds	YES	NO	See Narrative and SOPs
Hazardous Materials	NO	NO	Not Present
Water Quality	YES	NO	See narrative
Wetlands and Riparian Zones	NO	NO	See narrative
Wild and Scenic Rivers	NO	NO	Not Present
Wilderness, Wilderness Study Areas (WSAs)	YES	YES	wild horses currently using Diablo WSA
Adverse Energy Impact	NO	NO	No Impacts

1. Areas of Critical Environmental Concern (ACEC)

The 3,049 acre Black Hills RNA/ACEC ACEC/RNA is within the HMA. The ACEC is open to grazing. No activities within the alternatives would be allowed in the ACEC and, therefore no impacts would occur. ACECs will not be discussed further in this document.

2. Cultural Resources

Various portions of the HMA have been inventoried for cultural resources. The HMA contains several archeological sites. These are located frequently along edges of lakebed and at resources valuable for use; such as where stones for making tools were gathered or areas of collecting and harvesting plants.

Trap sites, holding facilities and vehicles have the potential to impact cultural resources. However, these activities are normally located within or immediately adjacent to an existing road or way. Most of the trap locations over the past 20 years have been immediately adjacent to the 6184, 6144, or 6104 Roads. Traps sites and holding facilities would be determined during the gather process and have not been previously surveyed. When selected sites have not been previously surveyed, cultural surveys would be completed prior to building traps or holding facilities to assure that concentrated gathering activities do not occur within a cultural site. Cultural resources will not be discussed further in this document.

3. Noxious Weeds

Noxious weeds have been documented on several sites within the HMA, especially in the vicinity of water sources, roads, and trails. The primary infestations consist of whitetop, scotch thistle, musk thistle and Mediterranean sage. Trap sites and other disturbed areas would be monitored for new weed sites and expansion of existing weed sites. Treatment would be implemented as necessary.

4. Special Status Species

Special Status Animals

There are 7 animal species documented in the Paisley HMA area for which special status has been assigned by either the State of Oregon or the Federal government and 5 animal species that may be found within the area:

Bald Eagle (*Haliaeetus leucocephalus*): This species is listed as threatened by the Oregon Department of Fish and Wildlife. The species is occasionally seen (BLM Winter Raptor Inventory files) at various locales, wherever carrion is available, from early November through February. No nesting by this species has been observed in the Paisley HMA area.

Greater Sage Grouse (*Centrocercus urophasianus*): This species is a federal species of concern which the USFWS is reviewing for consideration as a Candidate for listing under the Endangered

Species Act. Habitat for sage-grouse exists within the Paisley HMA for all aspects of the sage-grouse life cycle including lekking, nesting, brood rearing and winter habitat.

Long-billed Curlew (*Numenius americanus*): This species is listed as vulnerable by the Oregon Department of Fish and Wildlife. Any grassy meadow or reasonably level bunchgrass community could support a nesting pair.

Ferruginous Hawk (*Buteo regalis*): This species is a federal species of concern which the USFWS is reviewing for consideration as a Candidate for listing under the Endangered Species Act. The species has been observed in the Paisley HMA area. The main prey of ferruginous hawks in Oregon are Townsend's ground squirrels. Ferruginous hawks are most likely found in areas where this prey species is present.

Swainson's Hawk (*Buteo swainsoni*): This species is listed as vulnerable by the Oregon Department of Fish and Wildlife. The species has been observed occasionally in the Paisley area. Swainson's hawks utilize grassland habitats with scattered trees and may nest around marshes or along riparian corridors.

Burrowing Owl (*Athene cunicularia*): This species is a federal species of concern which the USFWS is reviewing for consideration as a Candidate for listing under the Endangered Species Act. Burrowing owls are known to nest in the Paisley HMA area.

Pygmy Rabbit (*Brachylagus idahoensis*): This species is a federal species of concern which the USFWS is reviewing for consideration as a Candidate for listing under the Endangered Species Act. Pygmy rabbits occur in some of the upland habitats and are frequently found in alluvial areas with deep soils and sagebrush cover.

White-tailed Jackrabbit (*Lepus townsendii*): Status for this species is listed as undetermined-status is unclear by Oregon Department of Fish and Wildlife. This species has been observed in the Paisley area, but little is currently known about the population or habitat status for this species.

Kit Fox (*Vulpes macrotis*): This species is listed as threatened by Oregon Department of Fish and Wildlife. Few breeding pairs of kit fox are known in Oregon. Some potential habitat for kit fox may exist in the Paisley HMA, however none have been documented.

Townsend's Big-eared Bats (*Corynorhinus townsendii*): This species is a federal species of concern which the USFWS is reviewing for consideration as a Candidate for listing under the Endangered Species Act. The species is especially vulnerable to disturbance at maternal colonies and winter hibernacula. No known hibernacula exist within the Paisley HMA.

Pallid Bat (*Antrozous pallidus*): This species is a federal species of concern which the USFWS is reviewing for consideration as a Candidate for listing under the Endangered Species Act. The species is vulnerable to predation by snakes, hawks and owls because it feeds on the ground. Pallid bats can be found throughout Oregon, so there is the potential that they exist within preferred habitats within the HMA.

Spotted Bat (*Euderma maculatum*): This species is a federal species of concern which the USFWS is reviewing for consideration as a Candidate for listing under the Endangered Species Act. Spotted bats are believed to have historically frequented the southeastern corner of the state, but it is not known if they currently use habitat in the HMA. The species utilizes tall cliff habitat for roosting.

Western Toad (*Bufo boreas*): This species is listed as vulnerable by Oregon Department of Fish and Wildlife. Suitable habitat for western toads extends over most of the entire state of Oregon. In desert areas they have been found to occupy habitat around stock ponds and reservoirs.

Special Status Plants

Cusick's Buckwheat (*Eriogonum cusickii*): BLM Sensitive

Snowline Cymopterus (*Cymopterus nivalis*): BLM Sensitive.

Known special status plant and animal habitat would be avoided for all activities analyzed. Surveys would be done prior to building traps, holding facilities or off road vehicle use. See SOPs in Appendix A.

5. Migratory Birds

Approximately 70 species of migratory birds are known to inhabit the HMA. These species include Brewer's sparrow, song sparrow, western kingbird, gray flycatcher, American robin, house finch, Townsend's solitaire, kestrel, red-tailed hawk, turkey vulture, golden eagle, Canada goose, common merganser, great blue heron, and many other species.

6. Water Quality/Riparian Areas/Floodplains

There are no floodplains or perennial streams within the Paisley Desert HMA. The Paisley Desert HMA is located at the northwestern extent of the Great Basin. Several closed basin playa lakebeds that contain water for at least part of the year. Several of the playa lakes contain pit type water holes for livestock, wild horse and wildlife use which are high alkali and generally poor water quality.

There are two wells in the area including ZX Well and Devils Well. One pipeline extends into the HMA from Brim Well outside the HMA. This pipeline was intended for use under emergency situations (drought). No water quality testing has been done to date, and water is not likely safe for human consumption.

Regulating the number of wild horses in the HMA would reduce concentrated use near water sources areas although this would mainly be unnoticeable. The vegetation resources near water would be impacted by regulating horse numbers. Water quality has not been measured, but is unlikely to be impacted by the alternatives.

Therefore the impacts section will focus on vegetation in the wet zones in the vicinity of water sources and water quality will not be discussed further in this document.

7. Wilderness Study Areas

The eastern portion of the Diablo Mountain WSA (OR-1-58) is located immediately west of the HMA and overlaps a small portion of this western boundary (Map 2). Horses often drift into the WSA because the only barrier between the two areas is a steep rim. Horses are used to traveling up and over rims in the steep basin and range topography in the area.

The 118,799 acre WSA is predominantly in natural condition and is primarily affected by the forces of nature. Evidence of human activity is mostly isolated. Because of the large size and the topography in and near the WSA, it offers exceptional opportunities for solitude. The wilderness characteristics for the Diablo Mountain WSA are described in more detail in Volume II of the Oregon BLM Wilderness Environmental Impact Statement (1989) pages 101-139.

Wilderness characteristics include naturalness, outstanding opportunities for solitude or primitive and unconfined recreation, and the presence of special features. The following definitions are from BLM Manual Handbook H-8550-1 – Interim Management Policy for Lands under Wilderness Review.

Naturalness - refers to an area which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."

Solitude - is defined as "the state of being alone or remote from habitations; isolation. A lonely, unfrequented, or secluded place"

Primitive and Unconfined Recreation - is defined as nonmotorized and undeveloped types of outdoor recreation activities.

Supplemental Values - are listed in the Wilderness Act as "ecological, geological, or other features of scientific, educational, scenic, or historical value."

The alternatives analyzed in this EA would be in conformance with the Interim Management Policy (IMP) for Lands under Wilderness Review for the following reasons:

The preservation of Wilderness values is the "overriding consideration" of Wilderness Study Area (WSA) management. None of the alternatives would affect the Wilderness value of naturalness, primitive unconfined recreation or special features. Opportunities for solitude would be reduced during gather operations, but would be temporary and for a short time period (two weeks). Previously disturbed areas are preferred for trap sites and no ground disturbance would be long term or require reclamation. The alternatives would meet the "overriding consideration."

The alternatives would meet the "nonimpairment criteria" because no permanent structures would be required, the traps are temporary, and the trapping activities would not degrade

Wilderness values. Any temporary surface disturbance associated with the trap sites and activities would not require reclamation.

The alternatives would not impair the WSA's suitability for preservation as Wilderness. There would be no long-term effects to the Wilderness values of size, naturalness, and opportunities for solitude or primitive and unconfined recreation. During all gather operations, solitude in the WSA would be temporarily decreased by sights and sounds of people, vehicles, and helicopters for about 2 weeks. Once the gather is completed, opportunities for solitude would return. For these reasons, WSAs will not be discussed further in this EA.

B. Noncritical Elements

1. Wild Horses

The Paisley Desert HMA has been periodically gathered since 1984. Numbers of wild horses captured and removed for each successive gather are documented in the Lakeview District Office. A summary is provided in Appendix G, Table 1. The last gather of 173 wild horses was completed in November, 2003. 36 horses were returned to the HMA bringing numbers to 62 within the HMA at that time. The Appropriate Management Level (AML) was established with the High Desert Management Framework Plan, 1983, as 60-110. The AML for Paisley Desert HMA was reviewed and then increased to a range of 60-150 horses with the Lakeview Resource Management Plan and Record of Decision (RMP/ROD), 2003.

The last census in the HMA and surrounding area was done in July 24, 2008. The population within the Paisley Desert HMA was 179 including 153 Adults and 26 foals under one year of age.

Oregon Department of Fish and Wildlife (ODFW) have reported up to 50 horses outside the HMA on Diablo Rim. The horses were seen during bighorn sheep population counts. The BLM confirmed that wild horses are using the Diablo Rim area. No livestock use has been authorized within this portion of the Diablo WSA since 1992.

Adult wild horses in the HMA weigh an average of 950 to 1,050 pounds and stand between 14.2 and 15.2 hands, with some stallions being slightly larger. The herd is managed for horses with of all color markings. Some of the more common colors within the herd include Pinto, dun, and gray. Most have saddle horse type confirmation with some individuals having Spanish horse characteristics.

Peak foaling period for this herd is from March through June. Peak breeding period is from April through July. Currently, the existing sex ratio within the complex is approximately 50/50.

Water is a limiting factor in many years throughout the Paisley Desert HMA. Most of the watering areas in the HMA are in the form of playa lakebed pit type waterholes that provide inconsistent water and often dry up in late summer or fall. Loss of horses during drought conditions has occurred in this HMA on two occasions.

Forage is allocated for 60 to 150 wild horses in the Paisley Desert HMA or 1,800 Animal Unit Months (AUMs). Inventory data shows that horse utilization outside the HMA is a potential conflict with big horn sheep in the Diablo Rim area.

Wild horse utilization combined with livestock use within the HMA is reaching heavy, 60-70%, around the main water sources near Sheeprock and Burma Rim (See Appendix H-Monitoring Summary 2009)

The BLM has documented a long history of horses drifting into the adjacent crested wheatgrass seedings east of the HMA and less frequent drift west into the Diablo WSA.

2. Grazing Management

Forage allocations for livestock grazing in the Paisley HMA are currently 10,151 AUMs of active preference. There are four livestock grazing allotments with pastures within the Paisley HMA that are used by two permittees, JR Simplot Trust and Martin Pernoll (see Table 1). JR Simplot Trust uses the ZX – Christmas Lake, Sheeprock, and Saint Patricks allotments which are operated under deferred rest, rest rotation, spring use, and rest rotation grazing systems, respectively. Pastures in the ZX Christmas Lake and Sheeprock allotments are rested from livestock grazing at least one year following livestock use and often rested two years. The Saint Patricks allotment is used, by livestock, only in the spring. Martin Pernoll uses the Squaw Lake allotment which is currently set up as a rest rotation grazing system. Pastures are grazed in the fall and winter.

Water for livestock and wild horses is mainly available from pit type ephemeral water holes which can vary drastically in water availability depending upon the year.

Overall rangeland trend is static throughout the allotments within the Paisley HMA. Current utilization levels in the Saint Patricks allotment are in the light percent (21-40) of the current year’s growth, while utilization in the ZX – Christmas Lake allotment (which is still in use) is near 50 percent of the current year’s growth.

Table 1

Permittee	Paisley HMA Allotments	Allot #	Season of use	Forage Allocation (AUMs)		
				Livestock	Wild Horses	Wildlife
ZX Ranch	ZX-Christmas Lake	10103	2/1 - 11/15	4598	778	122
ZX Ranch	Sheeprock	428	2/25 - 7/15	3969	929	284
ZX Ranch	Saint Patricks	419	3/1 - 5/15	750	35	53
Martin Pernoll	Squaw Lake	418	9/15 -12/31	834	58	165

3. Fish and Wildlife

Pronghorn antelope, mule deer and California bighorn sheep use the HMA for summering and

wintering ranges. Other important mammals that utilize the area include, but are not limited to, mountain lion, bobcat, coyotes, badger, jackrabbit, and cottontail rabbits. Some of the common birds include golden eagle, chuckar, California quail, mourning dove, red-tailed hawk, kestrel, and the great horned owl.

4. Vegetation

The vegetation within the Paisley Desert HMA is predominantly sagebrush/grassland communities. Primary species include the following:

Big Sagebrush (*Artemisia tridentata* var. *tridentata*), Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Low Sagebrush (*Artemisia arbuscula*), Bluebunch Wheatgrass (*Pseudoroegneria spicata*), Indian Ricegrass (*Achnatherum hymenoides*), Thurber's Needlegrass (*Achnatherum thurberianum*), Needle and Thread Grass (*Hesperostipa comata*), Bottlebrush Squirreltail (*Elymus elemoides*), Basin Wildrye (*Leymus cinereus*).

Salt desert shrub communities including shadscale (*Atriplex confertifolia*), greasewood (*Sarcobatus vermiculatus*) and inland saltgrass (*Distichlis spicata*) occur to a limited extent throughout the HMA.

Other species within the Paisley Desert HMA found to a lesser degree include the following: Grey Rabbitbrush (*Chrysothamnus nauseosus*), Green Rabbitbrush (*Chrysothamnus viscidiflorus*), Silver Sagebrush (*Artemisia cana*), and various forbs (predominantly *Asteraceae* and *Scrophulariaceae*).

Monitoring studies indicate the trend is stable to upward in upland plant communities.

5. Soils

Soils in the Paisley Desert HMA range from shallow (<20 inches deep) to moderately deep (20 – 40 inches deep) and are located on slopes ranging from 0 to over 60%. The entire area is a series of rims and basins running from north to south.

The texture of the soils found in this area ranges from sandy loams to silty loams. Some soils with high levels of clay particles can be found in the playa bottoms.

6. Recreation

Recreational opportunities throughout the Paisley Desert HMA include hunting, four-wheel driving, backpacking, wildlife viewing, hiking, camping, fishing, sightseeing, photography and wild horse viewing. Most people regard wild horses as a positive asset on the desert and travel many miles specifically to view the horses. Information on wild horse viewing is a fairly common request from the public.

7. Visual Resources

The Paisley Desert HMA is located within Visual Resource Management (VRM) Class I and IV areas. The western boundary within Diablo WSA is VRM Class I, while the non-WSA portion is VRM Classes IV. The VRM Class I objective is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude limited management activity. The level of change to the characteristic landscape should be very low and not attract attention. The VRM Class IV objective is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

8. Other Lands with Wilderness Character

The Oregon Natural Desert Association (ONDA) has submitted a written report recommending four areas within the HMA that they feel have wilderness character and are not currently designated as WSA. These proposals include the Black Hills, Burma Rim, Diablo Mountain North Addition, and Diablo Mountain East Addition. These areas total about 231,606 acres of which approximately 210,564 are within the HMA.

The Lakeview BLM staff has completed its own inventory of wilderness character within the Black Hills, and Diablo Mountain North proposals. These documents are available for review at www.blm.gov/or/districts/lakeview/plans/inventas.php. The BLM did not find wilderness character within either of these areas.

An inventory of the Diablo Mountain East proposal has not yet been completed. However, none of the alternatives analyzed in this EA would impact or is expected to otherwise prevent the BLM from finding wilderness character within the HMA, if it is actually present because the proposed actions are temporary with minimal ground disturbance.

The first factor reviewed was; whether the proposed action would alter a proposed unit boundary or road determination. Since travel would occur on existing roads and trails and no and maintenance would be done for the purpose of gathering wild horses, the potential actions would not affect the road inventory aspect of wilderness character review.

The second factor reviewed was potential ground disturbance caused by vehicles, and high horse concentrations at trap and holding site locations. Previous experience has shown that there are no long term impacts at these sites. Any signs of activity would normally be unnoticeable within two weeks after gather operations.

The final factor of review would be whether the proposed actions would have an impact on wilderness character values of size (acreage), natural condition, and outstanding opportunities for solitude or unconfined primitive recreation. The temporary potential actions described in this EA would not be within the normal elements reviewed in making a wilderness characteristic

determination. Please refer to the Lakeview web site for example of the above referenced wilderness character reviews for further clarification.

For these reasons other lands with wilderness character will not be discussed further in this EA.

CHAPTER IV: ENVIRONMENTAL CONSEQUENCES

The Action Alternatives have largely the same impacts to resources. They vary mainly in impacts to the wild horses themselves. Therefore the Anticipated Effects of alternatives 1-3 are combined and the minor differences described. The no action alternative is analyzed separately as the no action alternative has the greatest impact to resources.

A. Alternative 1-3

Anticipated Effects – Critical Elements

1. Noxious Weeds

Existing noxious weed infestations could be spread to other areas within the HMA by grazing animals including wild horses which eat the seed or carry the seed in their hair. This could include spread to new water sources. By maintaining horse numbers at or below AML, the chance of noxious weed spread would be reduced. Limiting vehicle travel to existing roads and ways, combined with avoidance of noxious weed infestations when selecting trap sites, would limit the potential of noxious weed spread during gathering operations.

2. Special Status Species

There would be no effect of the action alternatives on special status species except sage-grouse and pygmy rabbits. Sage-grouse utilize riparian zones for late season brood rearing. Forage in these areas is important to chick development and survival. A decrease in grazing by horses in these areas would improve habitat conditions for sage-grouse. Additionally, habitat conditions in upland areas would be expected to be maintained in better condition with reduced grazing also benefitting sage-grouse and potentially pygmy rabbits. Pygmy rabbits require increased amounts of grasses and forbs in their diet during the reproductive period. A reduction of grazing by horses could provide additional forage for pygmy rabbits during their reproductive period. By returning the wild horse herd to AML, the number of horses grazing and competing for limited water would be reduced.

3. Migratory Birds

Gathering horses and reducing the herd population to AML would improve availability of sagebrush and woodland habitat for migratory birds associated with those habitats. The quality of the habitat would be improved due to the decreased number of horses. Reproductive capabilities of migratory birds would be improved as a result of increased food sources. Cover for most ground-nesting species would be increased. Migratory bird species abundance and

diversity would be increased within the HMA.

B. Alternatives 1-3 Anticipated Effects – Noncritical Elements

1. Wild Horses

Appendix E provides the comparison of alternatives resulting from the WinEquus Population Model. Alternative 1 resulted in the smallest population growth rate. Alternative 1 resulted in the least number of horses removed. Alternative 3 resulted in the least number of horses gathered. Population modeling did not account for the population differences resulting from drifting of horses between neighboring the neighboring, private, and BLM lands.

Direct impacts to individual wild horses as a result of the gather and removal operation include the handling stress associated with these activities. Traumatic injuries that may occur typically involve biting and/or kicking that may result in bruises and minor swelling which normally does not break the skin. These impacts are known to occur intermittently during wild horse gather operations. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality of individuals from these impacts is infrequent but may occur in one half to one percent of horses gathered in a given removal operation (Nevada BLM statistics). Implementation of SOPs in Appendix A would help minimize direct impacts to animals. Alternative 1 has the greatest initial direct impact due to the large amount and degree of handling animals at the trap sites and holding facilities, alternatives 2&3 are about equal in direct impacts to wild horses. However increasing the time period between gathers would also reduce the overall direct impacts to wild horses.

The gelding aspect of alternative 3 is the only irreversible action considered; therefore gelding is the least favorable of the actions presented in this EA. A study of gelding dominant studs which took place in the Beatys Butte HMA found no reduction in population growth. Potentially gelding could reduce population growth rates; however, it is unknown what percentage would be necessary to accomplish this reduction.

Alternative 1 has the greatest positive potential impacts to breeding mares in the population that are treated with PZP. After foaling normally the first year the mares should be infertile for at least the next year. Mares would be expected to have reduced pregnancy induced stress levels during the infertile year. This would result in improved health of individual mares for that year.

Direct impacts to the wild horse herd's social structure as a result of the proposed gather, handling and removal operation include the temporary separation of foals from their mothers, and mixing and separation of individual bands. These impacts would be short-term (from a few hours to a few weeks) and would disappear within a few weeks following the gather as bands reform.

The indirect effect of removing excess wild horses before range conditions deteriorate further would be decreased competition among the remaining animals for the available water and forage. This should result in improved wild horse health and body conditions.

Population wide direct effects are immediate effects which would occur during or immediately following implementation of the action alternatives. They include the displacement of bands during capture and the associated dispersal which occurs following release, the modification of herd demographics (age and sex ratios), the temporary separation of members of individual bands of horses, and the reestablishment of bands following releases, and the removal of animals from the population. Direct population wide effects would be temporary in nature with most if not all effects disappearing within hours to several days of release. No observable effects would be expected within 1-month of release, except for a heightened awareness of human presence.

The removal of horses from the population would not be expected to have effect on herd dynamics or population variables; as long as the selection criteria for the removal ensured a “typical” population structure was maintained.

Effects of Alternative 3

The following affects would be expected from successive removals causing shifts in sex ratios away from normal ranges are. If selection criteria leave more studs than mares, band size would be expected to decrease, competition for mares would be expected to increase, recruitment age for reproduction among mares would be expected to decline, and size and number of bachelor bands would be expected to increase. Gelding of males would not significantly alter these results. Gelding would change the individual behavior of each male horse. Many of the gelded males would be expected to form bachelor bands. Breeding age mares would be expected to breed with available studs regardless of the presence of geldings in the HMA.

For mares, the greatest biological stress is during pregnancy and lactation. In wild horse populations, this occurs in late winter or early spring when forage availability is at its lowest level, and body condition is at its poorest. For studs, biological stress is at its peak during the breeding season. This peak biological demand is in the late spring and early summer and is more suited to a rapid recovery and a lower energy deficit than for mares.

Immunocontraception

Population modeling found no significant difference in results among action alternatives comparing the lowest average population size in 11 years. However, immunocontraception results indicate this alternative would result in the least number of horses gathered and placed in long term holding, adoption or sale programs over an 11 year period.

2. Grazing Management

The action alternatives would minimize competition for forage and water between livestock wildlife and wild horses and maintain the thriving ecological balance of the Paisley Desert HMA.

3. Fish and Wildlife

Some wildlife could be temporarily disturbed or displaced by the helicopter or by the placement

of the trap. The impacts would be short term and many species of wildlife would return to regular use of the areas after the disturbance has passed. The reduction of wild horse numbers to AML would reduce utilization of forage and water resources by horses and allow for improvement of habitat conditions for mule deer, pronghorn antelope, bighorn sheep and other wildlife species.

4. Vegetation

Some short-term disturbance to the vegetation would occur in and around the trap sites due to trampling and vehicle use. The disturbance would be kept to as small an area as possible. Disturbance of this type is normally not noticeable within a few days of completion of gather activities.

Reducing and then maintaining wild horse numbers within AML over the next ten years would reduce the overall impacts of heavy or repeated utilization. Heavy utilization or grazing during critical growth stages each year effects plant health. Reducing grazing pressure would improve forage species vigor, cover, and allow individual plant health recovery after grazing. The action alternatives would limit the intensity of use at or near water sources and surrounding uplands.

5. Soils

Soil loss would be expected to decrease in those areas of step topography near water sources where horses concentrate. Some minimal ground and soil disturbance would occur during construction of water wells. Soil compaction would be expected to increase around new well water sources. No significant increase in the current level of soil disturbance would occur from construction vehicle during transportation to the water wells because travel would be on existing roads.

6. Recreation

For a period of two weeks, vehicle access to some areas would be temporarily blocked by gather activities and facilities, displacing recreationists to other, nearby areas. People recreating in the HMA may be bothered by low-flying helicopters. Conversely, gather activities may attract additional people to the area. Public notification regarding gathering activities has been, and will continue to be, distributed prior to commencement of gather operations. Effects to recreation in the WSAs are described in the WSA section. New wildlife sighting opportunities may be available at well water locations.

7. Visual Resources

The traps and holding facilities would temporarily add complex rectangular and circular forms which would contrast with the surrounding landscape. These forms would be composed primarily of short vertical and long horizontal lines.

The use of pickups and ATVs for trap wing construction and removal outside of the WSAs could create sinuous linear features through the crushing of vegetation and exposure of soil. Line and

color contrasts could be created. The trap wings themselves are made from jute and t-posts. Only temporary, minor color contrasts would result from the trap wings.

C. Alternative 4 (No Action)

1. Anticipated Effects – Critical Elements

a. Noxious Weeds

The increase of horse numbers above the AML would increase the likelihood of spreading existing noxious weeds to areas within the HMA that have not been infested, primarily near water sources.

b. Special Status Species

Nesting and brood-rearing habitat for sage-grouse would continue to be degraded as wild horse numbers increased and upland riparian conditions deteriorated. The loss of cover in nesting areas would allow for more predation of nests while loss of forb species important to sage-grouse for nutrition during nesting and brood rearing would decrease the general health and reproductive status for the hens. Loss of cover around important water sources leaves hens and broods susceptible to predation as well. Heavy grazing could reduce grasses and forbs available for pygmy rabbit forage. Grasses in particular have been found to be an important component of pygmy rabbit diets during the reproductive period. Pygmy rabbit reproductive success could be altered if grasses were reduced below a critical level during the pygmy rabbit reproductive period.

c. Migratory Birds

While sagebrush and woodland habitat would still be available for migratory birds associated with these habitats, the quality of the habitat would be reduced due to the increased number of wild horses. Reproductive capabilities of migratory birds would be affected as a result of decreased food sources. Cover for most ground-nesting species would be reduced. Migratory bird species abundance and diversity would be reduced within the HMA.

2. Anticipated Effects – Noncritical Elements

a. Wild Horses

The horses would continue to multiply and the population would increase at a rate of 15 percent per year until approximately 835 horses would be present in the HMA and surrounding areas. The habitats ability to support the horse population along with other grazing animals would be reduced. Wild horses would most likely move outside the HMA as they have historically done in the past. The horses within HMA boundaries would continue to overuse the available forage and water and resources would deteriorate. The ecological balance within the HMA would be disrupted.

Population modeling found that Alternative 4 (No Action) resulted in the highest average population size in 11 years. Under this alternative, natural controls would regulate wild horse numbers through predation, disease, and forage and water availability. Historically predation and disease have not substantially regulated horse numbers in the Paisley Desert HMA. This alternative would not comply with The Wild Free-Roaming Horse and Burro Act of 1971 which mandates the Bureau to “prevent the range from deterioration associated with overpopulation” and “preserve and maintain a thriving natural ecological balance and multiple use relationships in that area.”

Emergency gathers would occasionally be necessary if drought conditions persist and natural water sources dry up. Horses would concentrate at the limited water sources in drought years. Without the added benefit of dependable water provided by additional water sources, some horses would be stressed or perish from lack of water on drought years. The current wild horse distribution patterns would remain the same.

b. Grazing Management

The Paisley HMA would potentially continue to support the existing wild horse population until herd growth exceeded the allocated 1,800 AUMs. Assuming that livestock and wildlife populations were managed to allocated levels, once the wild horse population exceeded the allocated use of 1,800 AUMs the Paisley HMA would become over populated. With higher levels of use by wild horses; livestock, wildlife, wild horses, and herbaceous plant populations would become stressed. Herbaceous plant communities could become overgrazed (especially near water sources). The level of livestock use would need to be reduced to compensate for the excess of horses, and wildlife would potentially be displaced into surrounding areas.

c. Fish and Wildlife

Wildlife populations would probably move outside the HMA to areas of less competition for limited water and forage for at least part of the year.

d. Vegetation

Areas which are presently over utilized, such as areas adjacent to water sources, would continue to be over used. The composition of vegetation would change to a higher percentage of undesirable plants, soil cover would be reduced, and the potential for erosion on steeper slopes would increase.

e. Soils

The majority of the Paisley Desert HMA steep basin and range topography with some flat to rolling hills. Soil loss would be expected to increase except in those areas near water sources with steeper slopes sources where horses concentrate.

f. Recreation

Overall, recreation in the HMA would not be affected. Opportunities for viewing wild horses would be improved, because of the larger number of wild horses. Hunting would potentially be reduced if wildlife moves outside the HMA.

g. Visual Resources

Visual resources would not be affected. VRM Class I and IV objectives would be met.

CHAPTER V: CUMULATIVE IMPACTS

A. Introduction

For the purposes of this analysis, cumulative impacts are considered at the herd management area scale. The reason for choosing this analysis scale is because the BLM has a good idea of other potential reasonably foreseeable actions that may occur within this area. Many of these potential future actions have been identified in the *Lakeview Resource Management Plan/Record of Decision*, Appendix E (BLM 2003). The timeframe of analysis is defined as the same 15-20 year expected life of the RMP/ROD.

The Council on Environmental Quality (CEQ) issued cumulative impact guidance on June 24, 2005, that states the “environmental analysis required under NEPA is forward-looking,” and review of past actions is required only “to the extent that this review informs agency decision-making regarding the proposed action.” Use of information on the effects of past action may be useful in two ways: one is for consideration of the proposed action’s cumulative effects, and secondly as a basis for identifying the proposed action’s direct and indirect effects.

The CEQ stated that “[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” This is because a description of the current state of the environment (ie. affected environment section) inherently includes the effects of past actions. Further, the “CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions.” Information on the current environmental conditions is more comprehensive and is more accurate for establishing a useful starting point for a cumulative effects analysis compared to establishing such a starting point by attempting to add up the effects of individual past actions to describe some environmental baseline condition from the past that, unlike current conditions, can no longer be verified by direct examination.

The second area in which the CEQ guidance states that information on past actions may be useful is in “illuminating or predicting the direct and indirect effects of a proposed action. The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects”.

The Department of Interior issued some additional guidance related to past actions which state, “when considering the effects of past actions as part of a cumulative effects analysis, the Responsible Official must analyze the effects in accordance with 40 CFR 1508.7 and in accordance with relevant guidance issued by the Council on Environmental Quality, such as “The Council on Environmental Quality Guidance Memorandum on Consideration of Past Actions in Cumulative Effects Analysis” dated June 24, 2005, or any superseding Council on Environmental Quality guidance (see 43 CFR 46.115)”.

B. Known Past Activities

The existing information on individual past actions is anecdotal only, and would not be a scientifically acceptable methodology useful in illuminating or predicting the incremental cumulative effects of the proposed action and its alternatives. Rather, the basis for predicting effects should be based on generally accepted scientific methodologies such as empirical research. Further, during public involvement opportunities for this proposal, no reviewer identified any need to exhaustively list individual past actions or to analyze, compare, or describe the environmental effects of individual past actions, in order to complete an analysis which would be useful for illuminating or predicting the cumulative effects of the proposed action.

A number of past disturbances have occurred in and immediately surrounding the herd management area as part of past or recent land management activities. These include: wildfires, prescribed fires, road construction and maintenance, new routes created by off-highway vehicle use, range improvement project construction and maintenance (fences, cattle guards, pipelines, waterholes, reservoirs, developed springs, and wells), and wildlife guzzler construction and maintenance. Livestock grazing is authorized on most pastures within the HMA. All of these past activities have affected or shaped the landscape into what it is today. Current conditions are described further in the “Affected Environment” section of this document.

C. Reasonably Foreseeable Activities

Vegetation and Weed Treatments

The *Lakeview RMP/ROD*, Appendix E, page A-144 to A-145 (BLM 2003), lists removal or control of about 1,700 acres of invasive juniper (non old-growth) and 45,000 acres of restoration as possible future management actions that could occur in the allotments within and surrounding the HMA during the life of the land use plan.

It is also possible that future noxious weed treatments could be necessary in small, site-specific portions of the allotment. Any such sites would be identified, treated, and monitored in accordance with the *Integrated Noxious Weed Control Program EA#OR-010-2004-03* (BLM 2004). This prevention and treatment program would continue regardless of the alternative adopted as the final decision.

Range Improvements

Installation of up to 4 solar-powered wells, at locations shown on Map 2 is proposed for future implementation in the Paisley Desert HMAP (see Appendix G) to provide reliable drinking water for horses, to improve distribution of horses, and reduce the need for emergency gathers during periods of drought. Troughs to store water would be placed at each well. All troughs would include bird ladders. Installations of 4 horse-friendly, hydraulic cattle guards are included in the Paisley Desert HMAP to eliminate problems with gates being left open and help keep wild horses within the HMA.

The *Lakeview RMP/ROD*, Appendix E, page A-144 to A-145 (BLM 2003), lists 4 miles of fencing that could occur in the allotments within and surrounding the HMA during the life of the land use plan.

Operation and Maintenance Activities

On page 100, the *Lakeview RMP/ROD* anticipated numerous types of operation and maintenance activities would occur in the HMA throughout the life of the plan including such things as “routine maintenance of existing roads, ditches, culverts, water control structures, recreation facilities, reservoirs, wells, pipelines, waterholes, fences, cattle guards, seedings, fish and wildlife structures, signs, and other similar facilities/projects”. It is possible that some of the existing roads, fences, and water development projects found in the HMA could receive some level of maintenance during the life of the RMP/ROD, depending upon need and funding availability.

D. Cumulative Impacts Common to All Alternatives

The cumulative effects of livestock grazing management (including fencing and water developments), noxious weed management, transportation management, juniper treatment, fire management, and operation and maintenance activities have already been described and analyzed at the resource area scale in Chapter 4 of the *Lakeview Proposed RMP/Final EIS*. This previous analysis is incorporated by reference and will not be repeated here. The cumulative effects described in the following section are similar to or within the range of those already analyzed in the *Lakeview Proposed RMP/Final EIS* (BLM 2003).

The types of routine operation and maintenance activities of existing facilities, including existing roads and range improvements that are expected to occur within the HMA are typically categorically excluded from NEPA analysis. The construction of cattle guards is also typically categorically excluded from NEPA. These types of activities are excluded from the need to conduct detailed NEPA analysis due to the negligible level of negative or positive impacts anticipated, even when considered at a regional or national scale. The cumulative effects of these activities at the HMA scale are, likewise considered negligible.

The extent of future noxious weed treatment and the anticipated impacts associated with such treatment would likely be small, but is highly speculative and difficult to accurately estimate. Based on the current knowledge of where noxious weeds exist, the most common vectors of

weed transport in the Lakeview Resource Area (vehicle use and water transport) (Map 1; BLM 2004), and the low risk of existing sites expanding or new sites developing in the HMA, the cumulative impacts associated with future treatments are expected to be similar to, and within the range of those identified and previously analyzed in the *Integrated Noxious Weed Control Program EA#OR-010-2004-03*. Namely there would be a reduction in the overall introduction, spread, and establishment of noxious weeds across the landscape, higher awareness and education of the noxious weed problem, better inventory of weed locations, and improved upland and wet meadow ecosystem health (page 14; BLM 2004).

Though it is difficult to predict with any certainty, the big sagebrush and juniper habitats present in the allotment could be subject to large-scale wildfire(s) in the foreseeable future, if the right conditions occur. The *Lakeview Proposed RMP/Final EIS* describes typical fire return intervals for these vegetation types (page 2-83, BLM 2003). The impacts of any future wildfire(s) would vary depending upon the fuel loads, moisture content, intensity of the burn, amount of area burned, and fire suppression tactics and rehabilitation methods used. In general, wildfire moves later vegetative seral stages (shrub and woodland) back to earlier vegetative stages (grasses and forbs), removes crust cover, and can make an area more susceptible to noxious weed or cheatgrass invasion. Stand-replacing wildfires would likely have a cumulative negative impact on sagebrush obligate wildlife species and their habitat. The net cumulative effects would ultimately depend upon how much habitat is treated or burned over time.

Future juniper treatment in the area could involve the use of mechanical or prescribed fire methods primarily in post-settlement (less than 130 year old) stands. Such treatments would be conducted in accordance with Forest and Woodlands management direction, pages 33-35, of the *Lakeview RMP/ROD* (BLM 2003). As a result, the overall health and diversity of existing sagebrush/grassland plant communities in the area would be improved by removing competition and releasing native grasses and shrubs (page 4-25; BLM 2003). The removal of invasive juniper from sagebrush/grassland communities would have an additive cumulative benefit on sagebrush obligate wildlife species and their habitat, including sage-grouse and pygmy rabbits.

E. Cumulative Impacts Alternatives 1-3

Gathering

The potential for incremental cumulative impacts on most resource values other than wild horses would be minimal under the three action alternatives. In addition to the cumulative effects described above, which are common to all alternatives, there would be lessened competition between individual horses for forage and limited water with fewer numbers of horses in the HMA. Gathering to the lower level of the AML (60 head) may reduce the frequency of gathers that are needed to maintain a thriving, ecological balance within the HMA, thereby, reducing the total stress on the horses associated with future gather activities.

Drifting

Drifting outside the HMA would potentially continue, but may be reduced if dependable fresh water is provided within the HMA and boundaries are strengthened.

Range Improvements

The impacts of future range improvements will require the preparation of additional environmental analysis and site-specific surveys prior to construction. In general, the construction of new wells, cattle guards, and fencing would cause ground disturbance within a relatively small area (5 to 10 acres). These impacts would be localized and include removal of vegetation and soil compaction from construction vehicles and future horse and livestock concentration and trailing. Both livestock and horses would tend to heavily utilize forage within a quarter-mile radius of the new water sources.

The dependable water sources provided by solar wells would improve horse distribution and reduce horse concentrations at existing water sources. The water from well sources has the potential to be less alkali and better tasting to grazing animals which would also allow for improved distribution. Fresh water is normally preferred over the alkali-laced water found at existing water sources. Although new well water would be used by both livestock and wild horses, livestock grazing would not be authorized if wells are the only available water during drought years. The wells would normally be used during the spring, summer, and fall and would be turned on or off depending on resource conditions. Wells would be turned off in the winter if adequate snow is available for winter months. If adequate snow is not available, the wells would need to be winterized or protected from freezing. This has the potential to reduce utilization levels in the vicinity of Sheeprack and Burma, which have historically had the highest concentration of horses. The fresh water provided from new wells has the potential to improve livestock distribution, as well.

Adding hydraulic cattle guards on the exterior western boundary would strengthen this boundary and increase the probability that horses would stay within HMA boundaries.

F. Cumulative Impacts Alternative 1 Only

Immunocontraception

The potential for cumulative impacts of this treatment on most resource values other than wild horses would be minimal. There would be lessened competition for forage and limited water with fewer numbers of horses. Administration of the immunocontraception vaccine, PZP, may reduce the frequency of gathers that are needed to maintain a thriving, ecological balance within the HMA, thereby reducing the stress on the horses associated with future gather activities.

G. Cumulative Impacts Alternative 4 (No Action)

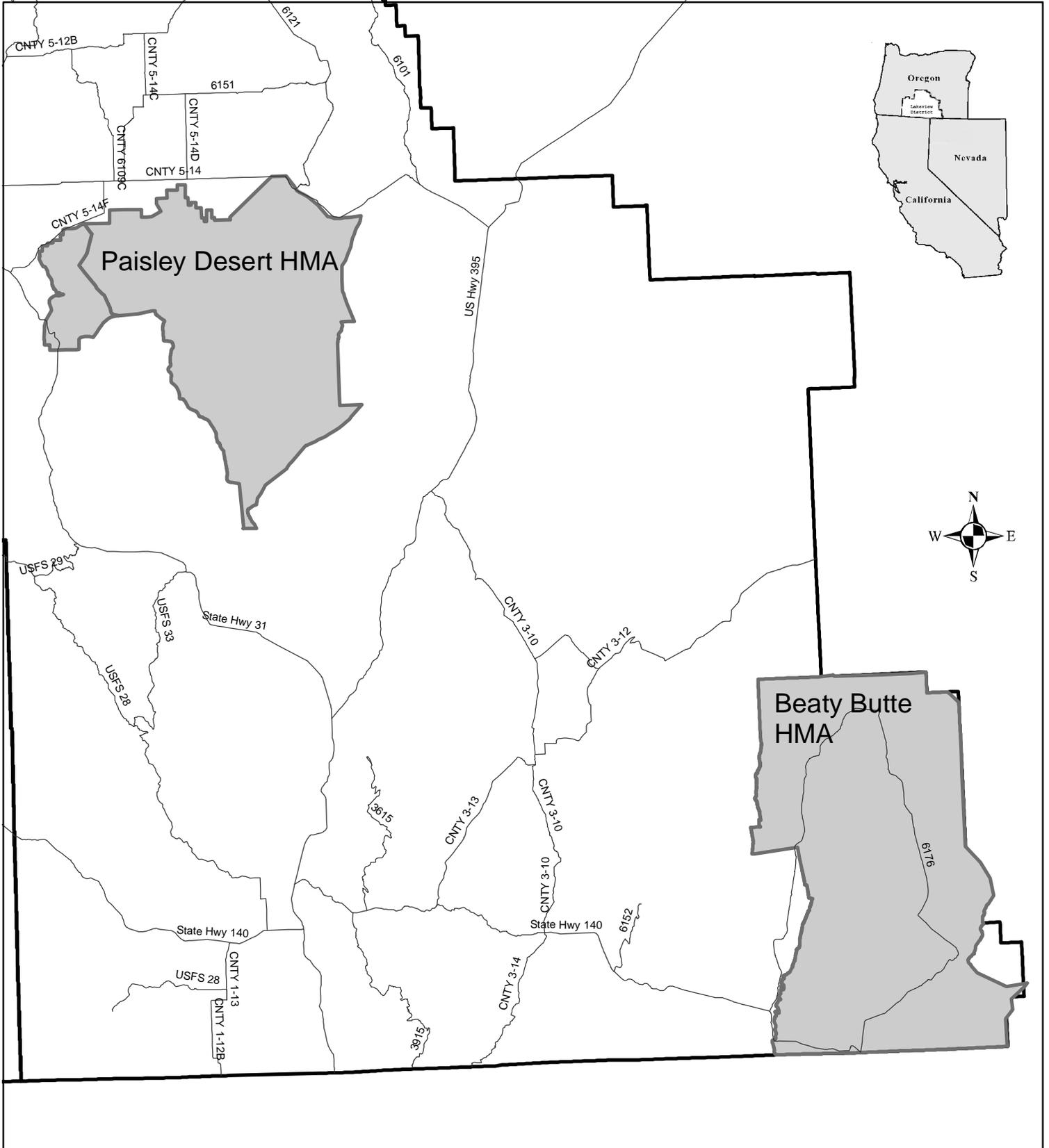
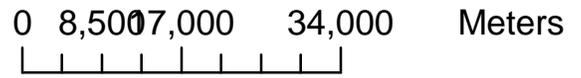
In addition to the cumulative effects described above, which are common to all alternatives, the horses would continue to over-populate the HMA and would move outside the HMA in higher numbers or frequencies to areas without forage allocations for wild horses. Range conditions within and outside of the HMA would deteriorate as vegetative cover would be reduced, particularly near existing water sources. Wildlife use patterns in the area could potentially be

altered. Domestic livestock use may need to be reduced or altered to compensate for the increased number of horses and deteriorating range conditions.

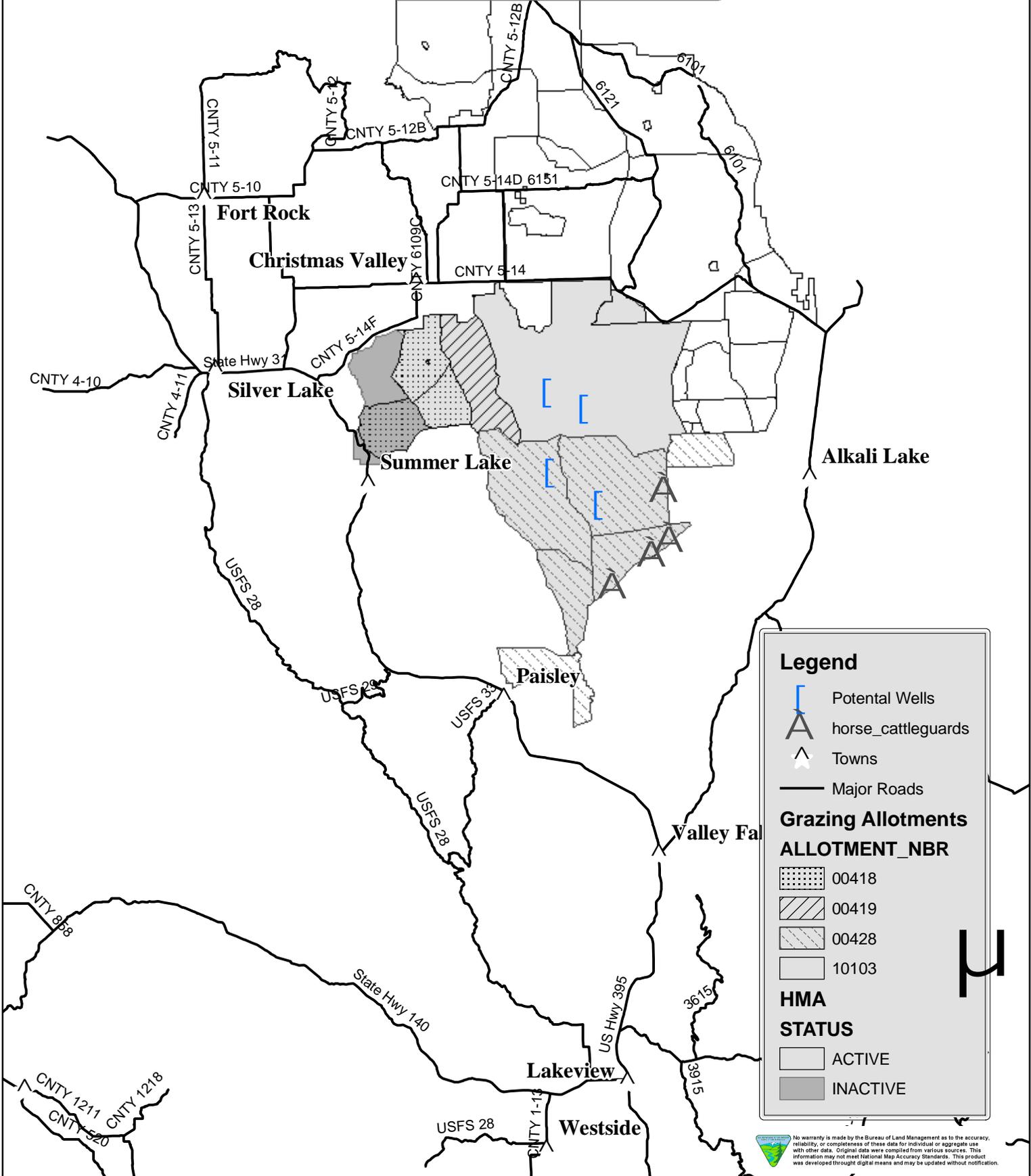
Map 1 - Herd Management Areas

Legend

- Major Roads
- Herd Management Area
- Lakeview Resource Area Boundary



Map 2 Paisley Desert HMA WSA, Grazing Allotments Range Improvements



Legend

- Potential Wells
- horse_cattleguards
- Towns
- Major Roads

Grazing Allotments

ALLOTMENT_NBR

- 00418
- 00419
- 00428
- 10103

HMA STATUS

- ACTIVE
- INACTIVE

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Appendix A

Standard Operating Procedures (Gather Operation)

Gathers would be conducted by utilizing contractors from the Wild Horse and Burro Gathers-Western States Contract, or BLM personnel. The following procedures for gathering and handling wild horses and burros would apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse and Burro Aviation Management Handbook* (March 2000).

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 capture operations necessitate the services of a veterinarian, one would be obtained before the capture would proceed. The contractor will be apprised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Trap sites and temporary holding sites will be located to reduce the likelihood of undue 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 Drive Trapping. This capture method involves utilizing a helicopter to herd wild horses and burros into a temporary trap.
2. Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses or burros to ropers.
3. Bait Trapping. This capture method involves utilizing bait (water or feed) to lure wild horses and burros into a temporary trap.

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

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

1. The primary concern of the contractor is the safe and humane handling of all animals captured. All capture attempts shall incorporate the following:
 - All trap and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction.
 - The Contractor may also be required to change or move trap locations as determined by the COR/PI.
 - All traps and holding facilities not located on public land must have prior written approval of the landowner.
2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.
3. All traps, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:
 - a. Traps and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses and 60 inches for burros, and the bottom rail of which shall not be more than 12 inches from ground level. All traps and holding facilities shall be oval or round in design.
 - b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered, plywood, metal without holes.
 - c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for burros, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 5

feet above ground level for burros and 1 foot to 6 feet for horses. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.

- d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses.
 4. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking gates.
 5. 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.
 6. 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.
 7. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or jennies with small foals, sick and injured animals, and estrays from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite traps, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.
 8. The Contractor shall provide animals held in the traps and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the traps or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. An animal that is held at a temporary holding facility after 5:00 p.m. and on through the night, is defined as a horse/burro feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
 9. It is the responsibility of the Contractor to provide security to prevent loss, injury or death of captured animals until delivery to final destination.
 10. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if injured animals must be destroyed and provide for destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.
 11. Animals shall be transported to final destination from temporary holding facilities within 24 hours after capture unless prior approval is granted by the COR/PI for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR/PI. Animals shall not be held in traps 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. Animals that are to be released back into the capture area may need to be transported back to the original trap site. This determination will be at the discretion of the COR.

B. CAPTURE METHODS THAT MAY BE USED IN THE PERFORMANCE OF A GATHER

1. Capture attempts may be accomplished by utilizing bait (feed or water) to lure animals into a temporary trap. 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. Traps shall be checked a minimum of once every 10 hours.
2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If

the contractor selects this method the following applies:

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

C. USE OF MOTORIZED EQUIPMENT

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI 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:
 - o 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
 - o 8 square feet per adult burro (1.0 linear foot in an 8 foot wide trailer);
 - o 6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer);
 - o 4 square feet per burro foal (.50 linear feet in an 8 foot wide trailer).
7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.
8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

D. SAFETY AND COMMUNICATIONS

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses and burros utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.

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

G. SITE CLEARANCES

Personnel working at gather sites will be advised of the illegality of collecting artifacts.

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

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

H. WILDLIFE

Holding Facility and Capture Site Selection

Sites selected for holding facilities, capture sites (traps) and capture site approaches shall be located a minimum of 100 yards from any pygmy rabbit or burrowing owl burrows. A qualified individual shall survey each intended site to determine if pygmy rabbit or burrowing owl burrows are present. When burrows for these species are located the intended site shall be moved a minimum of 100 yards from the closest burrow for these species. For the purpose of site selection, capture site approaches shall be considered to be the intended approach path for herding the horses into the trap for a distance of 300 yards from the trap entrance.

Emergency Captures March 1st to July 31st

Generally captures will take place outside of the reproductive period (March 1st to July 31st) for sage-grouse and migratory birds. In the event of an emergency capture during the period of time from March 1st to July 31st, the BLM wildlife biologist shall be consulted to develop a plan that will reduce impacts to nesting bird species. At minimum, no holding or capture facilities will be placed within 1 mile of any known active sage-grouse lek from March 1st to May 15th. Additionally, no capture activities will be allowed in sage-grouse nesting habitat from March 1st to June 15th.

I. ANIMAL CHARACTERISTICS AND BEHAVIOR

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

J PUBLIC PARTICIPATION

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

K. RESPONSIBILITY AND LINES OF COMMUNICATION

Lakeview Field Office - Contracting Officer's Representative/Project Inspector

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

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.

Appendix B

Standard Operating Procedures (Fertility Control Treatment)

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

- PZP vaccine would be administered by trained BLM personnel.
- The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18 gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14 gauge needle. These are loaded on the end of a trocar (dry syringe with a metal rod) which is loaded into the jabstick which then pushes the pellets into the breeding mares being returned to the range. The pellets and liquid are designed to release the PZP over time similar to a time release cold capsule.
- Delivery of the vaccine would be as an intramuscular injection while the mares are restrained in a working chute. 0.5 cubic centimeters (cc) of the PZP vaccine would be emulsified with 0.5 cc of adjuvant (a compound that stimulates antibody production) and loaded into the delivery system. The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid and pellets would be propelled into the left hind quarters of the mare, just below the imaginary line that connects the point of the hip and the point of the buttocks.
- All treated mares would be freeze-marked on the hip to enable researchers to positively identify the animals during the research project as part of the data collection phase.
- At a minimum, monitoring of reproductive rates using helicopter flyovers will be conducted in years 2 through 4 by checking for presence/absence of foals. The flight scheduled for year 4 will also assist in determining the percentage of mares that have returned to fertility. In addition, field monitoring will be routinely conducted as part of other regular ground-based monitoring activities.
- A field data sheet will be used by the field applicators to record all the pertinent data relating to identification of the mare (including a photograph when possible), date of treatment, type of treatment (1 or 2 year vaccine, adjuvant used) and HMA, etc. The original form with the data sheets will be forwarded to the authorized officer at NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.
- A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by HMA, field office, and state along with the freeze-mark applied by HMA.
- The field office will assure that treated mares do not enter the adoption market for three years following treatment. In the rare instance, due to unforeseen circumstance, treated mare(s) are removed from an HMA before three years has lapsed, they will be maintained in either a BLM facility or a BLM-contracted long term holding facility until expiration of the three year holding period. In the event it is necessary to remove treated mares, their removal and disposition will be coordinated through NPO. After expiration of the three year holding period, the animal may be placed in the adoption program or sent to a long-term holding facility.

Appendix C
Euthanasia Policy

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
October 20, 2005

In Reply Refer To:
4730/4700 (WO-260) P

EMS TRANSMISSION 11/03/2005
Instruction Memorandum No. 2006-023
Expires: 09/30/2007

To: All Field Officials (except Alaska)
From: Assistant Director, Renewable Resources and Planning
Subject: Euthanasia of Wild Horses and Burros

Program Area: Wild Horses and Burros

Purpose: This policy identifies requirements for euthanasia of wild horses and burros.

Policy/Action: 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, 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 from an acute or chronic infectious disease where State or Federal animal health officials order the humane destruction of the animal as a disease control measure.

Euthanasia in field situations (includes on-the-range and during gathers):

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.

If, for humane or other reasons, the need for euthanasia of an unusually large number of animals during a gather operation is anticipated, the euthanasia procedures should be identified in the pre-gather planning process. When

pre-gather planning identifies an increased likelihood that animals may need to be euthanized, plans should be made for an APHIS veterinarian to visit the gather site and consult with the authorized officer on euthanasia decisions. In all cases, the final responsibility and decision regarding euthanasia of a wild horse or burro rests solely with the authorized officer (43 CFR 4730). Euthanasia will be carried out following the procedures described in the 4730 manual.

Euthanasia at short-term holding facilities:

Under ideal circumstances horses would not arrive at preparation or other facilities that hold horses for any length of time with conditions that require euthanasia. However, problems can develop during or be exacerbated by handling, transportation or captivity. In these situations the authority for euthanasia would be applied:

- (A) If an animal suffers from a traumatic injury or other 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. A veterinarian should be consulted if possible.
- (B) If in the opinion of the authorized officer and a veterinarian, older wild horses and burros in short-term holding facilities cannot tolerate the stress of transportation, adoption preparation, or long-term holding they should be euthanized. However, if the authorized officer has inspected the animal and feels the animal's quality of life will not suffer, and the animal could live a healthy life in long-term holding, the animal should be shipped to a long-term holding facility.
- (C) It is recommended that consultation with a veterinarian is obtained prior to euthanasia. 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. Situations where acute suffering of the animal is not involved could include a physical defect or deformity that would adversely impact the quality of life of the animal if placed in the adoption program or on long-term holding. The authorized officer will ensure that there is a report from a veterinarian describing the condition of the animal that was euthanized. These records will be maintained by the holding facility.

If, for humane reasons, the need for the euthanasia of a large number of animals is anticipated, the euthanasia procedures should be identified to the WH&B State Lead or the National Program Office (NPO) when appropriate. A report that summarizes the condition, circumstances and number of animals involved must be obtained from a veterinarian who has examined the animals and sent to the WH&B State Lead and the NPO.

In all cases, final decisions regarding euthanasia of a wild horse or burro rest solely with the authorized officer (43 CFR 4730). Euthanasia will be carried out following the procedures described in the 4750-1 Handbook.

Euthanasia at long-term holding facilities:

This portion of the policy covers additional euthanasia conditions that are related to long-term holding facilities and includes existing facilities and any that may be added in the future.

At long-term holding facilities the authority for euthanasia would be applied:

- (A) If an animal suffers from a traumatic injury or other 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.
- (B) 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 and obligation to euthanize the animal in a humane and timely manner. In situations where acute suffering of the animal is not involved, it is recommended that a consultation with a veterinarian is obtained prior to euthanasia. The authorized officer will ensure that there is a report from a veterinarian describing the condition of the animal that was euthanized. These records will be maintained by the authorized officer.

The following action plan will be followed for animals at long-term holding facilities:

The WH&B Specialist who is the Project Inspector and the contractor will evaluate all horses and their body condition throughout the year. Once a year a formal evaluation as well as a formal count of all horses at long-term holding facilities will be conducted. The action plan for the formal evaluation is as follows:

1. All animals will be inspected by field observation to evaluate body condition and identify animals that may need to be euthanized to prevent a slow death due to deterioration of condition as a result of aging. This evaluation will be based on the Henneke body condition scoring system. The evaluation team will consist of a BLM WH&B Specialist and a veterinarian not involved with regular clinical work or contract work at the long-term holding facilities. The evaluations will be conducted in the fall (September through

November) to identify horses with body condition scores of 3 or less. Each member of the team will complete an individual rating sheet for animals that rate a category 3 or less. In the event that there is not agreement between the ratings, an average of the 2 scores will be used and final decisions will be up to the BLM authorized officer.

2. Animals that are rated less than a body condition score of 3 will be euthanized in the field soon after the evaluation by the authorized officer or their designated representative. The horses that rate a score 3 will remain in the field and should be re-evaluated by the contractor and WH&B Specialist that is the Project Inspector, for that contract, in 60 days to see if their condition is improving, staying the same or declining. Those that are declining in condition should be euthanized soon after the second evaluation.

3. The euthanasia process that will be used is a firearm. The authorized officer or their designated representative will carry out the process. Field euthanasia does not require the gathering of the animals which would result in increased stress and may cause unnecessary injury to other horses on the facility.

4. Documentation for each animal euthanized will include sex, color, and freeze/hip brand (if readable). Copies of all documentation will be given to the contractor and retained by BLM.

5. Arrangements for carcass disposal for euthanized animal(s) will be in accordance with applicable state and county regulations.

In all cases, the final decisions regarding euthanasia of a wild horse or burro for humane reasons rests solely with the authorized officer (43 CFR 4730). Euthanasia will be carried out following the procedures described in the 4750-1 Handbook.

Timeframe: This action is effective from the date of approval through September 30, 2007.

Budget Impact: Implementation of these actions would not result in additional expenditures over present policies.

Manual/Handbook Sections Affected: No manual or handbook sections are affected.

Background: The authority for euthanasia of wild horses or burros is provided by the Wild Free-Roaming Horse and Burro Act of 1971, Section 3(b)(2)(A) 43 CFR 4730.1 and BLM Manual 4730-Destruction of Wild Horses and Burros and Disposal of their Remains.

Decisions to euthanize require an evaluation of individual horses that suffer due to injury, physical defect, chronic or incurable disease, severe tooth loss or old age. The animal's ability to survive the stress of removal and/or their probability of surviving on the range if released, transportation to a BLM facility and to adoption or long-term holding should be determined. The long term care of these animals requires periodic evaluation of their condition to prevent long term suffering. These evaluations will, at times, result in decisions that will require the euthanasia of horses or burros if this is the most humane course of action.

Coordination: This document was coordinated with the Wild Horse and Burro Specialists in each affected state, the National Program Office and Wild Horse and Burro Advisory Board.

Contact: Questions regarding this memorandum should be directed to Lili Thomas, Wild Horse and Burro Specialist, Wild Horse and Burro National Program Office, at (775) 861-6457.

Signed by:

Thomas H. Dyer
Deputy Assistant Director

Authenticated by:

Robert M. Williams
Policy and Records Group, WO-560

Appendix D
Selective Removal Criteria
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
August 10, 2005

In Reply Refer To:
4710 (WO 260) P
Ref: IM 2004-138
IM 2004-151

EMS TRANSMISSION 08/16/2005
Instruction Memorandum No. 2005-206
Expires: 09/30/2006

To: All Field Officials (except Alaska)
From: Assistant Director, Renewable Resources and Planning
Subject: Gather Policy & Selective Removal Criteria

Program Area: Wild Horse and Burro Program

Purpose: This Instruction Memorandum (IM) establishes gather policy and selective removal criteria for wild horses and burros.

A. Gather Requirements

1. Appropriate Management Level Achievement (AML)

Periodic removals will be planned and conducted to achieve and maintain AML and be consistent with AML establishment and removal decisions. Removals below AML may be warranted when a gather is being conducted as an "emergency gather" as defined in I.M. 2004-151 or where significant rationale is presented to justify a reduction below AML.

2. National Environmental Policy Act (NEPA) Analysis and Decision

A current NEPA analysis and gather plan is required. This NEPA analysis and determination to remove excess animals must include and be supported by the following elements required by case law and the Public Rangelands Improvement Act (1978): vegetative utilization and trend, actual use, climatic data and current census. Along with standard components, the NEPA analysis must also contain the following:

- a. Results of population modeling that forecast impacts to the Herd Management Area's (HMA's) population resulting from removals and fertility control treatments.
 - b. The desired post-gather on-the-range population number, age structure and sex ratio for the managed population.
 - c. Fertility control will be considered in all Gather Plan/NEPA documents (IM No. 2004-138) and will be addressed in the population model analysis. A "do not apply" decision will be justified in the rationale.
 - d. The collection of blood samples for development of genetic baseline data.
3. Where removals are necessary to achieve or maintain thriving natural ecological balance, all decisions shall be issued full force and effect under the authority of 43 CFR § 4770.3(c).
 4. All gathers that have been approved by Washington Office (WO) through the annual work plan process and that are listed on the National Gather Schedule may proceed without further approval. Changes to the gather schedule involving increased removal numbers for listed gathers, adding new gathers, or substituting gathers require approval by WO-260. Requests for such gathers will be submitted using Attachment 1 to WO-260, Reno National Program Office (NPO), for review and approval by the WO-260 Group Manager.
 5. No WO approval is required for the removal of up to 10 nuisance animals per instance unless a national contractor conducts the removal.
 6. A gather and removal report (Attachment 2) is required for each wild horse and burro gather. Partial completion reports shall be filed periodically (every 2 to 5 days) during large lengthy gathers. A final report for all gathers will be submitted to the State WH&B Lead and WO-260, NPO, within ten days of gather completion.

B. Selective Removal Requirements

The selective removal criteria described below applies to all excess wild horses removed from the range. These criteria are not applicable to wild burros.

When gathers are conducted emphasis will be placed on the removal of younger more adoptable animals. However, the long term welfare of wild horse herds is critical and it is imperative that close attention be given to the post-gather on-the-range herd sex ratio and age structure to assure a healthy sustainable population.

Animals with conditions that may prevent adoption should be released to the range if herd health will not be compromised or harmed. Example conditions are disease, congenital or genetic defects, physical defect due to previous injury, and recent but not life threatening injury.

1. Age Criteria: Wild Horses will be removed in the following priority order:

- a). Age Class -Five Years and Younger
Wild horses five years of age and younger should be the first priority for removal and placement into the national adoption program.
- b). Age Class - Six to Fifteen Years Old
Wild horses six to fifteen years of age should be removed last and only if management goals and objectives for the herd can't be achieved through the removal of younger animals.
Animals encountered during gather operations should be released if, in the opinion of the Authorized Officer, they may not tolerate the stress of transportation, preparation and holding but would survive if released. Older animals in acceptable body condition with significant tooth loss and/or excessive tooth wear should also be released. Some situations, such as removals from private land, total removals, or emergency situations require exceptions to this.
- c). Age Class Sixteen Years and Older
Wild horses aged sixteen years and older should not be removed from the range unless specific exceptions prevent them from being turned back and left on the range.

C. Potential Exceptions to Selective Removal Requirements

1. Nuisance animals
2. Animals outside of an HMA
3. Land use plan or activity plan identifies certain characteristics that are to be selectively managed for in a particular HMA (Examples: Spanish characteristics, Bashkir "Curly" or others).
4. Total removals required by law or land use plan decisions
5. Court ordered gathers
6. Emergency gathers (see IM 2004-151)
7. Removal of wild horses treated with fertility control PZP. Specific instructions are outlined in IM 2004-138 in regards to removal of these animals.

Timeframe: The wild horse and burro gather and selective removal requirements identified in this IM are effective immediately and will expire on September 30, 2006.

Budget Impact: Once AML is attained, it will cost approximately \$1.7 million in additional gather costs annually to implement the selective removal policy. This action, on an annual basis, will avoid removal of about 1,500 unadoptable animals (older than five years) that would cost about \$10 million to maintain in captivity over their lifetime.

This policy will achieve significant cost savings by minimizing the numbers of less adoptable animals removed prior to the achievement of AML and making the removal of older animals negligible in future years.

Background: The 1992 Strategic plan for the WH&B program defined criteria for limiting the age classes of animals removed so that only the most adoptable animals were removed. The selective removal criteria from Fiscal Years 1992 through 1995 allowed the removal of animals five years of age and younger. In 1996, because of drought conditions in many western states, the selective removal policy was changed to allow for the removal of animals nine years of age and younger. In 2002, the removal policy was modified to allow for prioritized age specific removals: 1st priority remove five years of age and younger animals, 2nd priority 10 years and older and last priority animals aged six to nine years if AML could not be achieved.

This selective removal policy provides for the long term welfare of on the range populations, emphasizes the removal of the most adoptable younger animals to maintain and achieve AML and directs that older horses less able to stand the rigors of capture, preparation, and transportation stay on the range.

Manual/Handbook Sections Affected: The gather and selective removal requirements do not change or affect any section of any manual or handbook.

Coordination: Varying policies on selective removal have been in place and coordinated with field staffs since the early 1990's. The revised policy was developed by the WO, circulated to field offices for review and comment, and presented to the National Wild Horse and Burro Advisory Board. In addition, the concept of selective removal was part of the FY 2001 Strategy to Achieve Healthy Lands and Viable Herds; The Restoration of Threatened Watersheds Initiative that was widely communicated to Congress and the general public.

Contact: Questions concerning this policy should be directed to Dean Bolstad in the Wild Horse and Burro National Program Office, at (775) 861-6611.

Signed by:
Laura Ceperley
Acting Assistant Director
Renewable Resources and Planning

Authenticated by:
Barbara J. Brown
Policy & Records Group, WO-560

Appendix E- Population Model
Population Sizes in 11 years

Alternatives	Population sizes in 11 years			Gather Rates			Average Growth Rate(10yr)
	Min	Ave	Max	Gathered	Removed	Treated	
Alternative 1 Gather with Fertility Control							
Alternative 1 –Lowest trial	53	100	223	330	242	16	12.2
Alternative1- Median trial	70	116	242	370	284^	23	17.3#
Alternative 1 –Highest trial	81	128	312	526	390	42	24.2
Alternative 2- Gather Only							
Alternative 2 –Lowest Trial	55	110	225	257	248	0	18.1
Alternative 2- Median Trial	70	124	242	381	368	0	23.5
Alternative 2 -Highest	82	138	313	457	444	0	29.3
Alternative 3 –Adjust Ratio Males/Females							
Alternative 3-Lowest Trial	48	107	223	265	240	0	13.2
Alternative 3-Median Trial	67	119	240	318*	289	0	19.9
Alternative 3-Highest	77	133	306	470	429	0	25.3
Alternative 4- No Action							
Alternative 4-Lowest Trial	223	572	1048	0	0	0	16.6
Alternative4-Median Trial	242	867	1935	0	0	0	22.9
Alternative 4-Highest Trial	317	1272	3233	0	0	0	27.7

Model results

No significant difference in population size between the action alternatives

The following are based on the median trial:

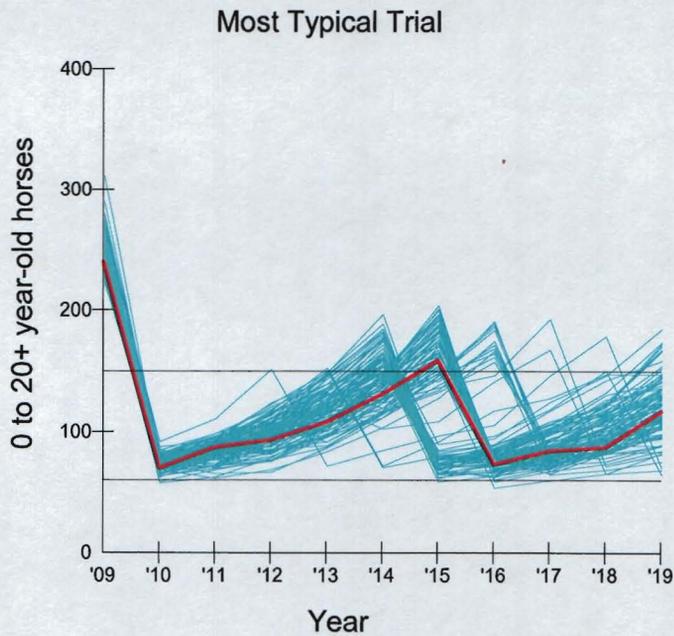
*Least number gathered- Alternative 3

^Least removed- Alternative 1

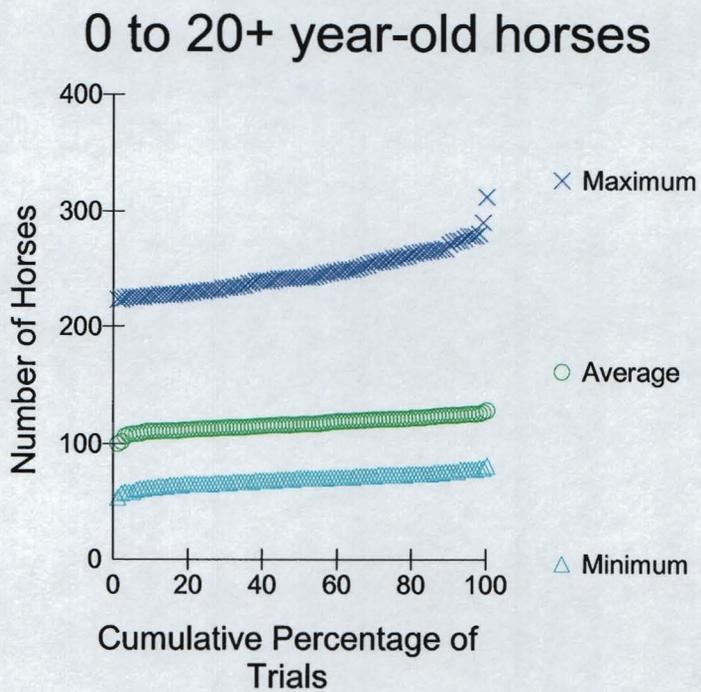
Smallest Growth Rate –Alternative 1

Paisley Population Modeling Runs Gather with Fertility Control

Most Typical Trial



Population Size



Paisley Population Modeling Runs

Gather with Fertility Control

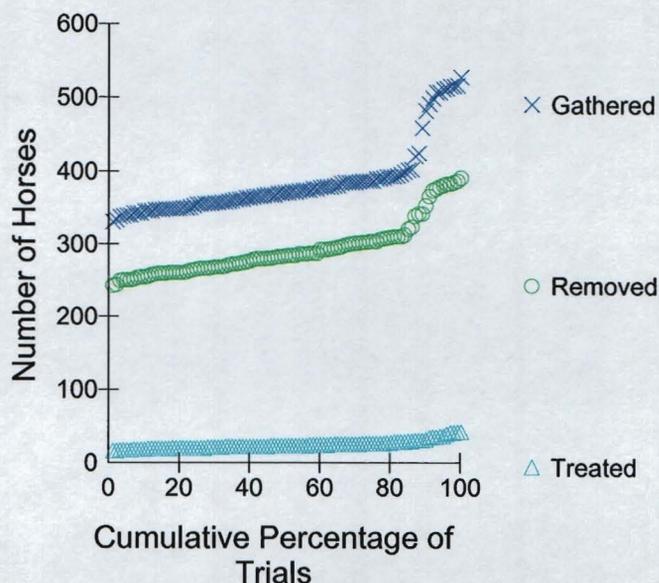
	Population Sizes in 11 Years*		
	Minimum	Average	Maximum
Lowest Trial	53	100	223
10th Percentile	62	110	226
25th Percentile	65	113	231
Median Trial	70	116	242
75th Percentile	73	121	259
90th Percentile	76	124	272
Highest Trial	81	128	312

* 0 to 20+ year-old horses
Explanation

In 11 years and 100 trials, the lowest number of 0 to 20 year old horses ever obtained was 53 and the highest was 312. In half the trials, the minimum population size in 11 years was less than 70 and the maximum was less than 242. The average population across 11 years ranged from 100 to 128.

Gathers

0 to 20+ year-old horses

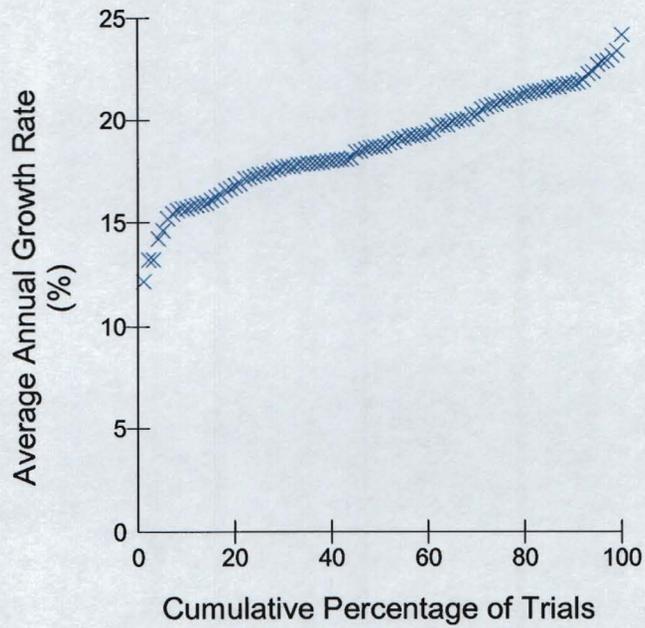


	Totals in 11 Years*		
	Gathered	Removed	Treated
Lowest Trial	330	242	16
10th Percentile	345	254	18
25th Percentile	354	266	20
Median Trial	370	284	23
75th Percentile	388	303	26
90th Percentile	485	358	32
Highest Trial	526	390	42

* 0 to 20+ year-old horses

Paisley Population Modeling Runs Gather with Fertility Control

Growth Rates

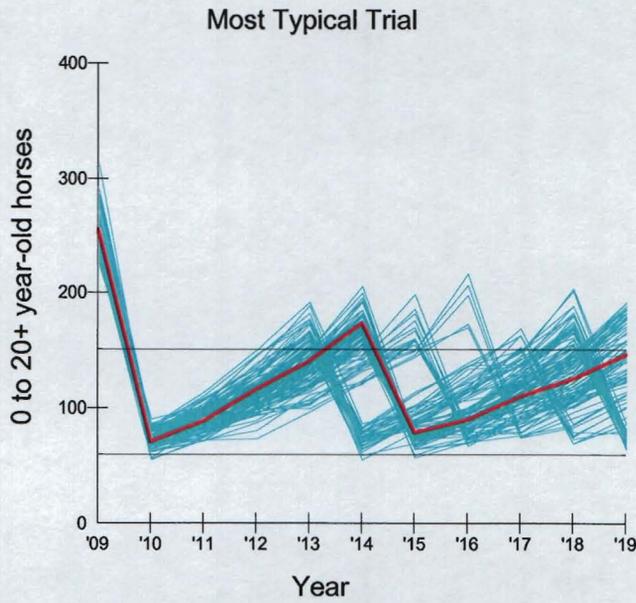


Average Growth Rate in 10 Years

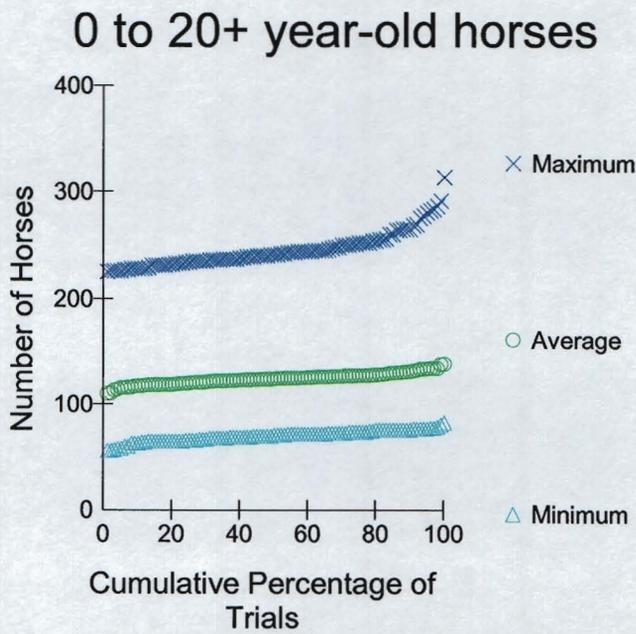
Lowest Trial	12.2
10th Percentile	15.7
25th Percentile	17.3
Median Trial	18.7
75th Percentile	20.9
90th Percentile	21.8
Highest Trial	24.2

Paisley Population Modeling Runs Gather without Fertility Control

Most Typical Trial



Population Size



Paisley Population Modeling Runs

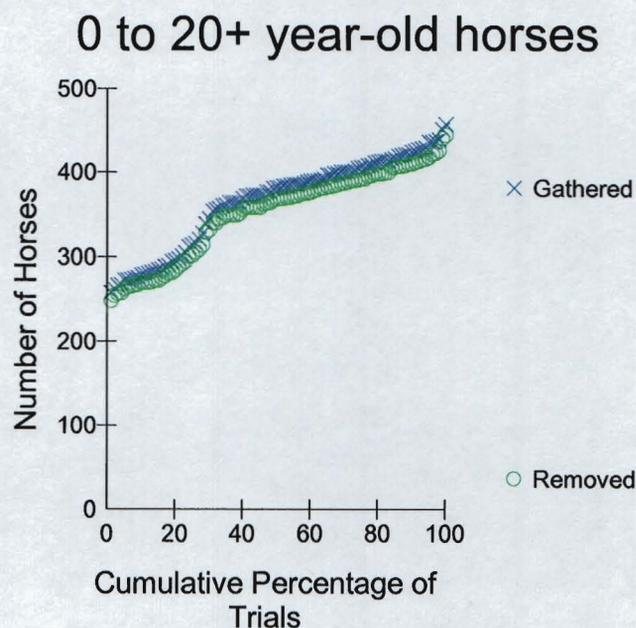
Gather without Fertility Control

	Population Sizes in 11 Years*		
	Minimum	Average	Maximum
Lowest Trial	55	110	225
10th Percentile	62	117	228
25th Percentile	65	120	234
Median Trial	70	124	241
75th Percentile	73	127	252
90th Percentile	76	131	266
Highest Trial	82	138	313

* 0 to 20+ year-old horses
 Explanation

In 11 years and 100 trials, the lowest number of 0 to 20 year old horses ever obtained was 55 and the highest was 313. In half the trials, the minimum population size in 11 years was less than 70 and the maximum was less than 241. The average population across 11 years ranged from 110 to 138.

Gathers



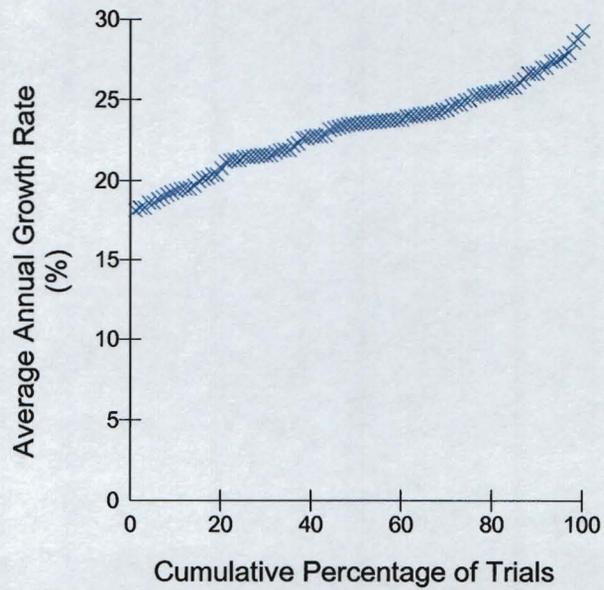
	Totals in 11 Years*	
	Gathered	Removed
Lowest Trial	257	248
10th Percentile	278	269
25th Percentile	314	303
Median Trial	381	368
75th Percentile	405	391
90th Percentile	424	410
Highest Trial	457	444

* 0 to 20+ year-old horses

Paisley Population Modeling Runs

Gather without Fertility Control

Growth Rate

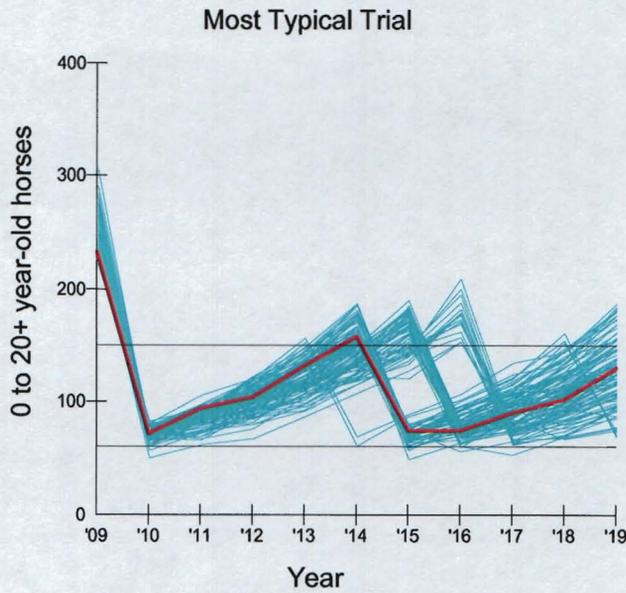


Average Growth Rate in 10 Years	
Lowest Trial	18.1
10th Percentile	19.4
25th Percentile	21.4
Median Trial	23.5
75th Percentile	25.1
90th Percentile	26.8
Highest Trial	29.3

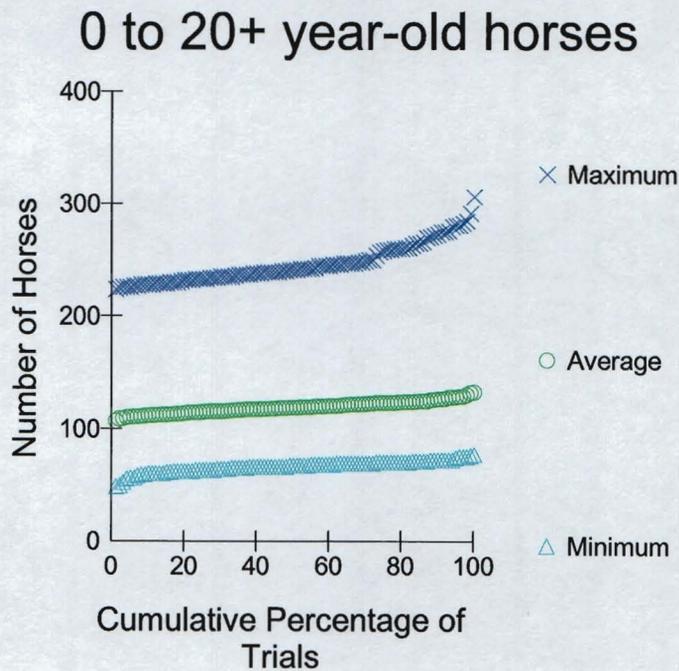
Paisley Population Modeling Runs

Gather to a 60/40 Sex Ratio without Fertility Control

Most Typical Trial



Population Size



Paisley Population Modeling Runs

Gather to a 60/40 Sex Ratio without Fertility Control

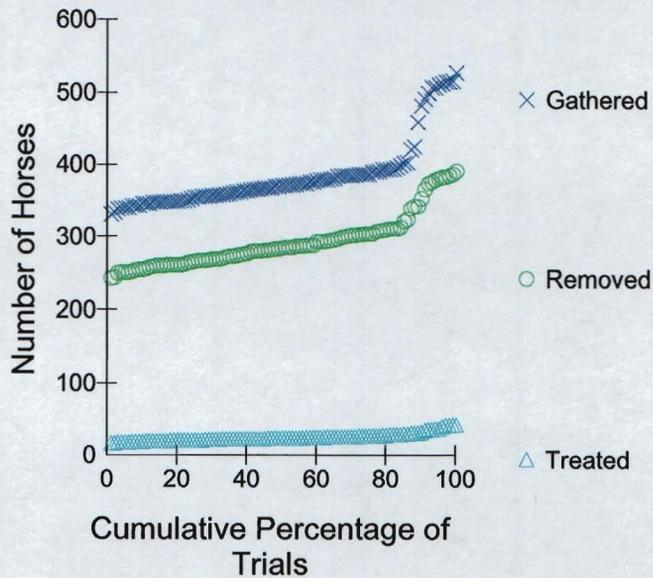
	Population Sizes in 11 Years*		
	Minimum	Average	Maximum
Lowest Trial	48	107	223
10th Percentile	60	112	227
25th Percentile	63	115	232
Median Trial	67	119	240
75th Percentile	70	123	258
90th Percentile	72	126	273
Highest Trial	77	133	306

* 0 to 20+ year-old horses
Explanation

In 11 years and 100 trials, the lowest number of 0 to 20 year old horses ever obtained was 48 and the highest was 306. In half the trials, the minimum population size in 11 years was less than 67 and the maximum was less than 240. The average population across 11 years ranged from 107 to 133.

Gathers

0 to 20+ year-old horses



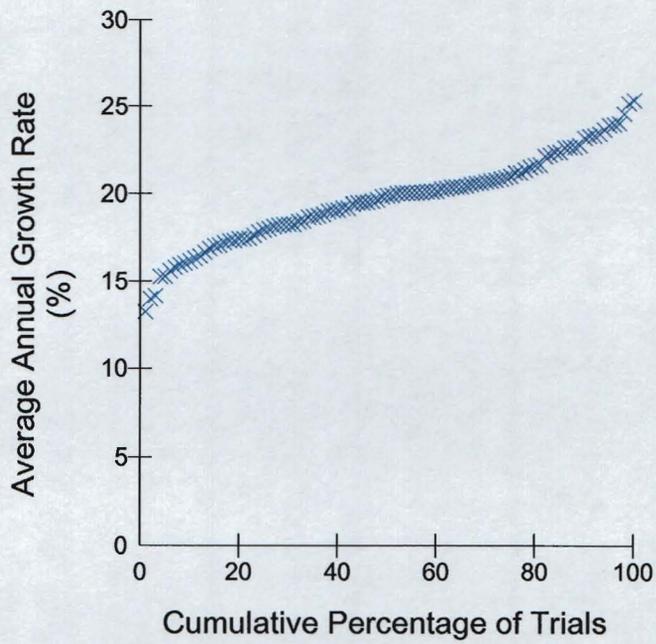
	Totals in 11 Years*	
	Gathered	Removed
Lowest Trial	265	240
10th Percentile	282	258
25th Percentile	302	272
Median Trial	318	289
75th Percentile	373	339
90th Percentile	416	376
Highest Trial	470	429

* 0 to 20+ year-old horses

Paisley Population Modeling Runs

Gather to a 60/40 Sex Ratio without Fertility Control

Growth Rate



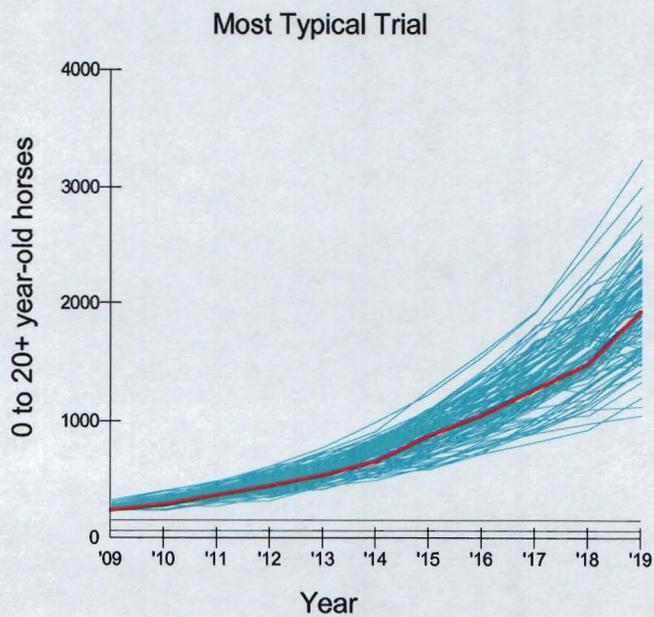
Average Growth Rate in 10 Years

Lowest Trial	13.2
10th Percentile	16.2
25th Percentile	18.0
Median Trial	19.9
75th Percentile	21.1
90th Percentile	23.2
Highest Trial	25.3

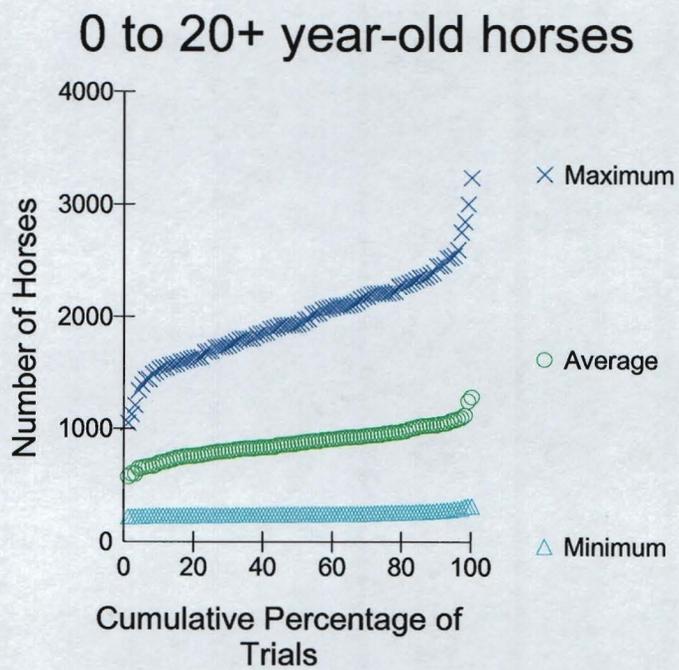
Paisley Population Modeling Runs

No Action

Most Typical Trial



Population Size



Paisley Population Modeling Runs

No Action

	Population Sizes in 11 Years*		
	Minimum	Average	Maximum
Lowest Trial	223	572	1045
10th Percentile	230	698	1528
25th Percentile	234	784	1702
Median Trial	242	867	1935
75th Percentile	258	950	2206
90th Percentile	276	1032	2450
Highest Trial	317	1272	3233

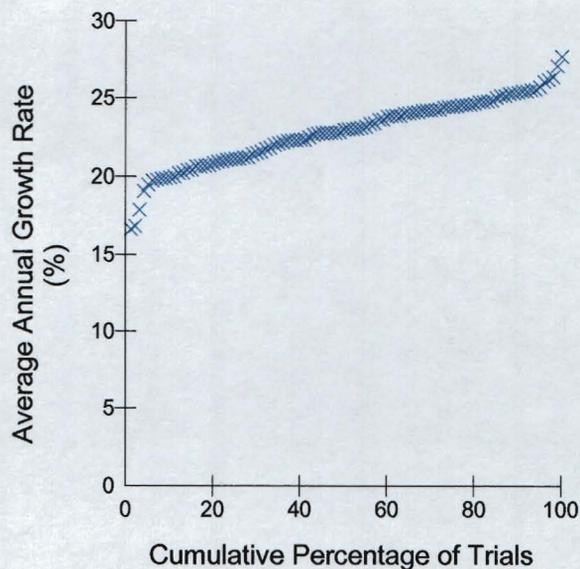
* 0 to 20+ year-old horses

Explanation

In 11 years and 100 trials, the lowest number of 0 to 20 year old horses ever obtained was 223 and the highest was 3,233. In half the trials, the minimum population size in 11 years was less than 242 and the maximum was less than 1,935. The average population across 11 years ranged from 572 to 1,272.

Gathers – N/A

Growth Rate



Average Growth Rate in 10 Years

Lowest Trial	16.6
10th Percentile	19.9
25th Percentile	21.1
Median Trial	22.9
75th Percentile	24.4
90th Percentile	25.4
Highest Trial	27.7

Genetic Analysis of the Paisley
Desert, Alvord Tule Springs, Coyote
Lake, Jackies Butte and Murderer's Creek
HMAs from Oregon

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This is the report on the genetic analysis of five HMAs from the State of Oregon. In this report data from all five populations will be presented in combined tables but each HMA also will be analyzed separately. Also included here is data from three other Oregon herds that were tested several years ago.

METHODS

Forty-three samples from the Paisley Desert HMA were received on 12-13-2000 followed by 47 samples on 01-10-01. Samples from Jackies Butte HMA were received on these same dates, 11 on 12-13-00 and 20 on 01-10-01. Twenty samples from Alvord Tule Springs HMA were received on 02-08-01 and 58 samples were received from Coyote Lake HMA on this same day. An additional 15 samples from Coyote Lake were received on 02-16-01 and 17 samples from Murderer's Creek HMA were received on this same date.

Seventeen genetic marker systems were analyzed. Seven systems were red blood cell alloantigen loci (the *A*, *C*, *D*, *K*, *P*, *Q* and *U* horse blood groups) tested by standard serological methods of agglutination and compliment mediated hemolysis. The other 10 systems were biochemical polymorphisms detected by electrophoretic techniques. These systems were Albumin (*ALB*), Alpha-1-beta Glycoprotein (*AIB*), serum cholinesterase (*ES*), Vitamin D Binding Protein (*GC*), Glucose phosphate Isomerase (*GPI*), Alpha Hemoglobin (*HB*), Phosphoglucomutase (*PGM*), Phosphogluconate Dehydrogenase (*PGD*), Protease Inhibitor (*PI*), and Transferrin (*TRF*). In addition to the above genetic systems, DNA was extracted from the blood samples and tested for variation at 12 equine microsatellite (mSat) systems. These were *AHT4*, *AHT5*, *ASB2*, *ASB17*, *ASB23*, *HMS3*, *HMS6*, *HMS7*, *HTG4*, *HTG10*, *LEX33*, and *VHL*

20. These systems were tested using an automated DNA sequencer to separate Polymerase Chain Reaction (PCR) products.

A variety of genetic variability measures were calculated from the gene marker data. The measures were observed heterozygosity (H_o) which is the actual number of loci heterozygous per individual and is based upon biochemical loci only; expected heterozygosity (H_e) which is the predicted number of heterozygous loci based upon gene frequencies and was calculated for biochemical loci only and all marker systems (Het); effective number of alleles (A_e) which is a measure of marker system diversity; total number of variants (TNV); and estimated inbreeding level (F_{is}) which is calculated as $1-H_o/H_e$. These same measures were calculated for the mSat data. However, the DNA data will not be reported here due to limited comparative information.

Genetic markers also can provide some information about ancestry in some cases. Genetic resemblance to domestic horse breeds was calculated using Rogers's genetic similarity coefficient, S . This resemblance was summarized in a tree diagram by use of a restricted maximum likelihood (RML) procedure.

RESULTS AND DISCUSSION

Variants present and allele frequencies for the blood group and biochemical markers are given in Table 1. No variants were observed which have not been seen in horse breeds, however, several uncommon variants were present. Table 2 gives the values for the genetic variability measures of the five horse herds. Also shown in Table 2 are values for other Oregon feral horse populations plus values from a representative group of domestic breeds. The breeds were selected to cover the range of variability measures in domestic horse populations. Mean values for feral herds (based upon data from 54 herds) and mean values for domestic breeds (based upon 118 domestic horse populations) also are shown.

Mean genetic similarity of the five herds to domestic horse breed types are shown in Table 3. Table 4 shows the genetic similarity matrix for comparison of the Oregon populations to each other. A dendrogram of relationship of the herds to a standard set of domestic breeds is shown in Figure 1. This is a consensus tree from 50 individual RML runs. The numbers in the tree are the percentage of runs where the grouping to the right of the number occurred. Figure 2 shows the relationships among the Oregon herds.

GENETIC VARIANTS

Paisley Desert – Three variants that are uncommon across most horse breeds were present in this herd. The *TF-D2* variant is almost exclusively found in heavy draft breeds and its presence in this HMA strongly suggests some draft ancestry. The frequency of the variant was less than 3% but it does not occur at high frequency in any breed. Another unusual variant is the *D-cf* variant. This marker is most common in the Gaited North American Breeds such as the Standardbred and Tennessee Walker but also has been observed in some Asian breeds. One horse in this herd appeared to carry the *Es-O* variant. This is a variant that can only be positively recognized when homozygous or by parentage analysis so it is not certain in this horse. However, it was definitely recognized in the Alvord Tule herd which indicates that it could be in this region. The variant is most often seen in Pony breeds but also is rarely seen in the North American Gaited breeds.

Alvord Tule Springs– One individual carried the *TF-M* variant. This marker is primarily found in Pony breeds but has been observed in the Morgan Horse. The *ES-O* variant was positively identified in one horse that was homozygous for this null allele (one that produces no product). The variant may be more common than calculation of frequency by direct count indicates (0.05, Table 1). Genotype proportions predict a frequency of 0.22.

Coyote Lake – No extremely rare variants were seen in this herd.

Jackies Butte – The *D-cf* variant observed in the Paisley Desert HMA also was seen in this herd. Also, this herd had the *Pi-W* variant which is primarily associated with Iberian type horses.

Murder's Creek – No extremely rare variants seen in this herd.

GENETIC VARIABILITY

Paisley Desert – Individual genetic variation as reflected in the H_o value is slightly lower than average in the Paisley herd (Table 2). However, populational genetic diversity is greater than the average for domestic horses. H_e , H_{et} , A_e and TNV are all above the domestic mean and well above the feral horse mean. The difference in H_o and H_e is suggestive of some population subdivision when the patterns of variation across systems is examined. There is a statistically significant heterozygote deficit at the *PGM* and *GPI* systems. Inbreeding also could cause these patterns and the high, positive F_{is} , however, the H_e and TNV values are too high for inbreeding to be the most likely explanation, even though population size is low.

Alvord Tule – H_o in this population is quite low and near the level which would indicate concern. However, as in the Paisley herd, H_e is relatively high and the A_e and TNV numbers also are reasonably high considering the sample size. H_o probably is slightly higher than calculated due to the *ES-O* variant, which can't be identified in the heterozygous condition with certainty. Again, the data suggest some population subdivision or inbreeding. There is a marked heterozygote deficit although it is only statistically significant at its *AIB* system. There was no variation at two systems.

Coyote Lake – The pattern of variation in this herd is similar to that of the Paisley herd. H_o is slightly below the mean while H_e is higher than the mean. A_e is somewhat low but TNV is

above the feral horse average. There is a significant heterozygote deficit at the *GPI* system but *Ho* and *He* are near equilibrium at the other systems. Overall, variability looks good in this herd.

Jackies Butte – Genetic variation is low and at a level that would indicate concern. The *Ho* value of 0.297 is among the lowest seen for either domestic or feral horses. *He* is relatively higher but still is quite low. However, allelic diversity as indicated by *Ae* and *TNV* is above the average for feral horses. The pattern of variation is suggestive of some inbreeding although the ratio of the *Ho* to *He* does not show a significant deficit of heterozygosity except at the *ALB* system.

Murderer's Creek – The *Ho* value of 0.429 is a high value, well above the means of horses. *He* and *Het* levels also are high. There is a slight deficit of observed heterozygosity compared to *He* but it is not statistically significant. Genetic diversity as reflected by number of variants and *Ae* are relatively low but this may be due to the small sample size. Predicted *TNV* based upon sample size and variability was about 57.

GENETIC SIMILARITY

Genetic similarity for the five Oregon compared to major groups of domestic horse populations are shown in Table 3. The Paisley Desert had its highest mean *S* with the Gaited North American breeds and the second highest mean *S* with the New World Iberian derived breeds. The North American Gaited breeds includes those such as the Morgan, Saddlebred and Standardbreds. Highest *S* to individual breeds was with the Kentucky Mountain Saddle Horse (.906) followed by the Morgan (.905). New World Iberian breeds includes primarily South American breeds and the Paso breeds with highest *S* in this group with the American Paso Fino (.893). The highest individual *S* value for the Paisley herd was with the Moroccan Barb (.919).

Highest mean S for the Alvord Tule herd was with the Light Racing and Riding breeds which includes the Thoroughbred and Quarter Horse (which was the highest individual breed S at .865). In general, this herd has low S with almost all breeds suggesting mixed origins or loss of variation, which is consistent with the H_0 level.

Coyote Lake showed similar patterns of S to those of Alvord Tule. Highest S was with the Light Racing and Riding breeds with the S of .872 with the Quarter Horse the highest individual breed S . The Jackies Butte herd showed this same type of pattern as well, except that the Moroccan Barb had the highest S with the Jackies Butte herd (.864) compared to .862 for the Quarter Horse. Both these herds had overall low S with the domestic breeds.

Murderer's Creek had the lowest overall S values, probably due to the low sample size. Highest mean S was with the Light Racing and Riding breeds followed by the New World Iberian breeds.

Table 4 shows the S values among the Oregon HMAs, including the Warm Springs, Riddle Mountain and Kiger herds. The Murderer's Creek herd showed the lowest similarity to the other herds. Again, sample size for this herd probably accounts for this difference. However, this also was the most geographically distant herd from the other populations. Figure 2 summarizes the relationship in a tree diagram. This figure does show relationships that appear to roughly correspond to geographical distances.

Figure 1 shows the relationships of the Oregon HMAs to domestic breeds reduced to two dimensions. The Alvord Tule, Coyote Lake, Paisley Desert and Jackies Butte herds fit between the clusters that includes breeds of the Light Racing and Riding breeds which is consistent with the data in Table 3. The Kiger and Riddle herds pair together (as expected) on the outside of the cluster that includes all the non-Iberian type of light horses. Murderer's Creek groups within the

cluster of Iberian derived breeds even though its highest S was with the Racing and Riding breeds. The Warm Springs herd clusters with some of the Pony breeds but the reasons are not readily apparent. I will not discuss this observation here as this herd is to be examined separately later.

RECOMMENDATIONS

Paisley Desert. This herd has moderate individual variability but high populational diversity. However, 17 of the 69 total variants observed have frequencies less than 0.05 and eight of these have frequencies below 0.025. All these variants are at risk of loss, in which case populational diversity would be more in line with H_0 . Population size of this herd (based upon a report from Jan. 11, 2001) is low at about 60 individuals. This would be an effective population size (N_e) of only about 25 to 30 which is well below the minimum recommended N_e , which is 50. This herd should not be in jeopardy in the near future but loss genetic variation to levels of concern could occur within the next 20 years. This population should be closely monitored.

Alvord Tule Springs. This population has low individual variation but good populational diversity and only seven variants have low frequencies that put them at risk of loss. Population size of this herd is at a reasonably safe level. If there are no drastic reductions in herd size it should be possible for variability to be maintained in this herd for at least the next 50 years.

Coyote Lake. This herd has moderate to good variability at both the individual and populational level. Considering population size of this herd, this HMA should have no genetic variation concerns barring some type of catastrophe.

Jackies Butte. This herd has very low variation and 10 variants have frequencies below 0.025 putting this herd at risk of loss of additional diversity. Population size is marginal. This herd should be closely monitored for changes in reproductive levels or physical defects in foals.

Murderer's Creek. This population has high levels of genetic variation. Population size should keep an N_e at or above the minimum recommended level. This herd should require no action if population levels are maintained.

Table 1. Frequencies of the variants observed in the five HMAs examined. PD=Paisley Desert, AT=Alvord Tule Springs, CL=Coyote Lake, JB=Jackies Butte, MC=Murderer's Creek.

System	Variant	PD	AT	CL	JB	MC
TRF	D	.189	.125	.089	.435	.353
	D2	.028	.000	.000	.000	.000
	F1	.000	.050	.007	.000	.000
	F2	.478	.475	.397	.387	.471
	H1	.044	.000	.000	.000	.029
	H2	.100	.225	.205	.177	.000
	M	.000	.025	.000	.000	.000
	O	.078	.000	.055	.000	.000
	R	.083	.100	.247	.000	.147
A1B	F	.028	.100	.021	.177	.000
	K	.889	.900	.979	.823	.559
	S	.083	.000	.000	.000	.441
ES	F	.044	.075	.089	.032	.265
	G	.094	.025	.034	.032	.294
	H	.006	.050	.000	.000	.059
	I	.678	.750	.775	.919	.323
	L	.106	.000	.068	.000	.000
	S	.000	.000	.007	.000	.000
	O	.006	.050	.000	.000	.000
	R	.067	.050	.027	.016	.059
	ALB	A	.333	.325	.233	.258
B		.667	.675	.767	.742	.882
GC	F	.817	.700	.644	.984	1.000
	S	.183	.300	.356	.016	.000
PGD	F	.844	.775	.744	.790	.794
	S	.156	.225	.226	.210	.206
PGM	F	.139	.000	.055	.016	.382
	S	.861	1.000	.945	.984	.618
GPI	F	.022	.000	.000	.016	.235
	I	.972	1.000	.904	.984	.765
	S	.006	.000	.096	.000	.000
HB	AII	.000	.075	.000	.000	.000
	BI	.711	.600	.541	.774	.559
	BII	.289	.325	.459	.226	.441
PI	F	.000	.053	.021	.000	.088
	G	.050	.026	.000	.000	.000
	H	.011	.000	.000	.016	.000
	I	.044	.079	.123	.032	.147
	K	.039	.000	.021	.000	.000
	L	.294	.447	.493	.177	.412
	L2	.000	.105	.068	.081	.000

Table 1 (continued)

System	Variant	PD	AT	CL	JB	MC	
A	N	.028	.211	.041	.048	.000	
	O	.000	.026	.034	.000	.000	
	P	.017	.000	.000	.226	.000	
	R	.000	.000	.000	.000	.147	
	S	.211	.053	.103	.081	.147	
	T	.094	.000	.000	.048	.000	
	U	.211	.000	.096	.177	.059	
	W	.000	.000	.000	.113	.000	
	adf	.397	.277	.344	.499	.714	
	adg	.022	.051	.007	.016	.000	
	b	.121	.161	.092	.081	.000	
	c	.063	.221	.225	.153	.000	
	bc	.000	.000	.000	.000	.067	
	-	.396	.291	.332	.252	.219	
C	a	.620	1.000	.611	.378	.740	
	-	.380	.000	.389	.622	.260	
D	ad	.097	.325	.288	.065	.100	
	d	.044	.025	.022	.016	.033	
	dk	.155	.250	.089	.172	.734	
	dghm	.083	.125	.178	.177	.000	
	de	.042	.000	.033	.000	.000	
	deo	.104	.050	.034	.016	.133	
	dfk	.023	.000	.000	.280	.000	
	bcm	.122	.075	.048	.145	.000	
	cgm	.156	.120	.188	.064	.000	
	cegi	.166	.030	.072	.016	.000	
	cefg	.000	.000	.048	.000	.000	
	cf	.006	.000	.000	.048	.000	
	K	a	.063	.000	.000	.000	.000
		-	.937	1.000	1.000	1.000	1.000
P	ac	.173	.204	.120	.165	.211	
	ad	.173	.204	.020	.165	.211	
	b	.062	.000	.021	.016	.000	
	-	.592	.592	.739	.654	.578	
Q	abc	.063	.025	.056	.033	.317	
	b	.049	.000	.044	.000	.049	
	c	.216	.268	.115	.087	.049	
	-	.672	.707	.784	.880	.585	
U	a	.270	.106	.101	.238	.423	
	-	.730	.894	.899	.762	.577	

Table 2. Genetic variability measures.

	<i>N</i>	<i>H_o</i>	<i>H_e</i>	<i>F_{is}</i>	<i>H_{et}</i>	<i>A_e</i>	<i>TNV</i>
Paisley Desert	90	0.353	0.395	0.105	0.444	2.597	69
Alvord Tule Springs	20	0.320	0.377	0.151	0.383	2.083	56
Coyote lake	73	0.358	0.381	0.061	0.400	2.111	63
Jackies Butte	31	0.297	0.308	0.036	0.361	2.343	57
Murderer's Creek	17	0.429	0.447	0.040	0.432	2.183	47
Warm Springs	43	0.386	0.390	0.011	0.463	2.661	62
Riddle Mtn.	105	0.432	0.428	-0.011	0.475	2.781	73
Kiger	154	0.409	0.415	0.013	0.465	2.650	77
Thoroughbred	265	0.294	0.288	-0.019	0.325	2.009	64
Arabian	117	0.307	0.327	0.061	0.376	2.132	67
Andalusian	140	0.348	0.362	0.039	0.425	2.508	75
Shetland Pony	50	0.368	0.407	0.095	0.452	2.595	71
Welsh Pony	42	0.388	0.387	-0.002	0.453	2.603	76
American Saddlebred	259	0.404	0.409	0.013	0.435	2.625	96
Peruvian Paso	141	0.451	0.445	-0.014	0.469	2.761	77
Belgian Draft	82	0.427	0.415	-0.028	0.451	2.386	66
Feral Horse Mean	54	0.360	0.351	-0.035	0.385	2.218	53.5
Standard Deviation		0.051	0.053	0.118	0.067	0.339	12.5
Domestic Horse Mean	118	0.371	0.365	-0.014	0.414	2.398	65.4
Standard Deviation		0.049	0.043	0.065	0.039	0.253	11.1

Table 3. Mean Rogers genetic similarity (*S*) of each of five Oregon HMAs to groups of domestic horse breeds. Standard deviations are shown parentheses and ranges are given below means.

	PD	AT	CL	JB	MC
Light Racing & Riding Breeds	.852 (.032) .790-.897	.825 (.024) .785-.865	.835 (.026) .793-.872	.825 (.022) .800-.862	.780 (.018) .752-.808
Oriental and Arabian Breeds	.835 (.030) .799-.919	.819 (.030) .754-.860	.814 (.029) .778-.871	.818 (.027) .781-.864	.775 (.018) .749-.809
Old World Iberian Breeds	.850 (.030) .801-.898	.791 (.027) .756-.827	.797 (.036) .748-.838	.818 (.019) .789-.839	.764 (.035) .717-.828
New World Iberian Breeds	.856 (.028) .810-.893	.803 (.025) .760-.839	.813 (.024) .773-.845	.818 (.036) .763-.861	.776 (.032) .723-.807
North American Gaited Breeds	.869 (.031) .820-.906	.819 (.033) .769-.855	.834 (.034) .773-.869	.824 (.026) .777-.852	.776 (.028) .727-.812
Heavy Draft Breeds	.825 (.038) .746-.878	.777 (.040) .697-.821	.798 (.037) .719-.843	.784 (.029) .709-.825	.740 (.033) .666-.774
True Pony Breeds	.827 (.032) .779-.888	.779 (.027) .741-.828	.793 (.030) .749-.844	.790 (.032) .741-.845	.745 (.026) .704-.797

Table 4. Rogers' genetic similarity (*S*) values among the eight feral horse populations from Oregon that have been tested genetically.

	PD	AT	CL	JB	MC	WS	RM	K
Paisley Desert	-							
Alvord Tule Springs	.873	-						
Coyote Lake	.880	.898	-					
Jackies Butte	.870	.836	.847	-				
Murderer's Creek	.796	.757	.766	.769	-			
Warm Springs	.861	.798	.799	.834	.772	-		
Riddle Mtn.	.883	.829	.833	.839	.824	.855	-	
Kiger	.873	.819	.813	.835	.815	.848	.941	-

Figure 1. Reduced

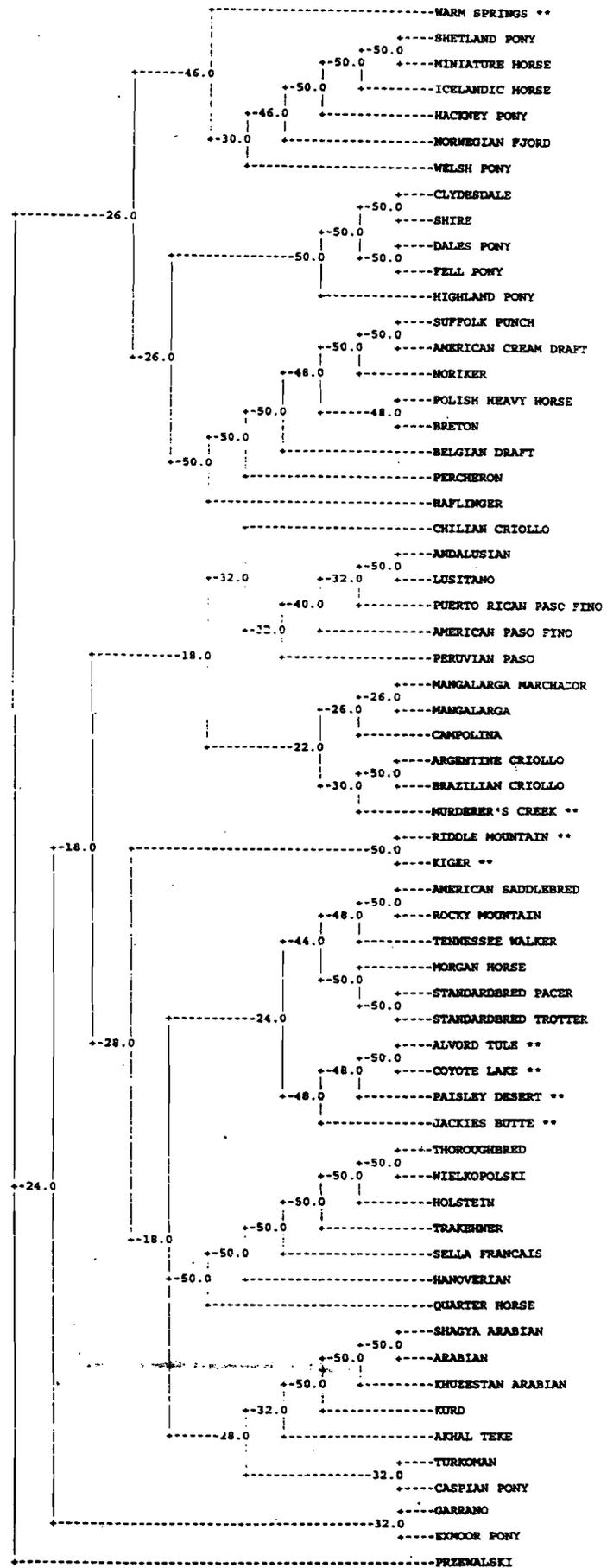


Figure 1. Denrogram of genetic similarity of the Oregon feral horse herds compared to 53 domestic horse breeds based upon 50 RML runs (see text). Feral herds are indicated by **.

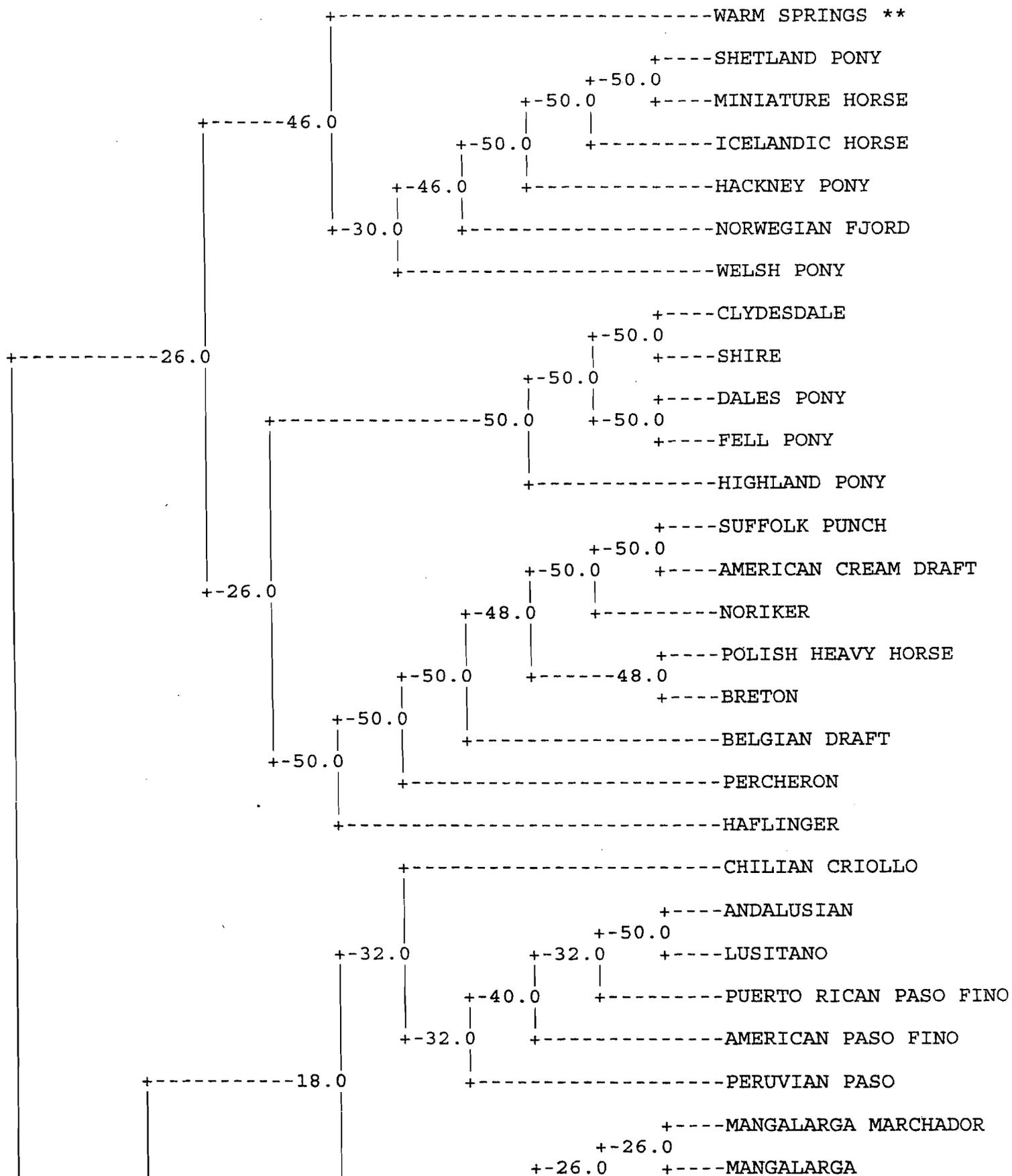
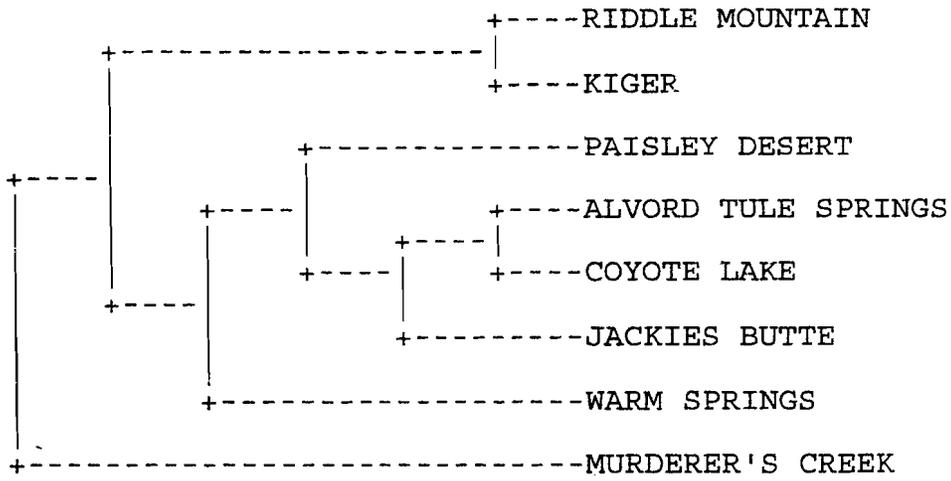


Figure 2. Dendrogram of genetic similarity among Oregon populations of feral horses.



Appendix: Raw data for horses tested for each of the five HMAs.

Accno.	Loc	Biochemical Systems										Blood Group Systems						
		TF	A1B	ES	AL	GC	PGD	PGM	GPI	HB	PI	A	C	D	K	P	Q	U
Paisley Desert																		
00-34504	pd38	F2F2	K K	I I	B B	F S	F F	S S	I I	B1B1	L T	-----	- a	--cde-g-ik	mn-	- - -	-b-	-
00-34505	pd38	F2O	K K	I L	A B	F S	F S	F S	I I	B1B2	I L	-----	- a	-bcd----	- mn-	a - -	---	-
00-34507	pd38	R R	K K	I I	A B	F F	F F	S S	I I	B1B1	G K	-b---	- a	---de---	- --o	a a-	abc	a
00-34509	pd38	D D	K K	G G	A B	F F	F F	S S	I I	B1B2	L U	a--d-	- -	--cde-g-i-	mno	- --	abc	a
00-34511	pd38	F2O	K K	I I	A B	F S	F S	S S	I I	B1B2	I U	-----	- a	---d--gh	- mn-	a - -	---	-
00-34513	pd38	D F2	K K	R R	A B	F S	F F	S S	I I	B1B2	K L	-----	- a	--cde-g-ik	mn-	- --	abc	-
00-34515	pd38	F2F2	K K	G I	B B	F F	F F	S S	I I	B1B1	L S	-----	- a	---de---	k ---	- a-	---	a
00-34517	pd38	D F2	K S	R R	B B	F F	F S	S S	I I	B1B2	L T	a--d-	- a	--c-e-g-i-	mn-	- ab	abc	a
00-34518	pd38	F2H2	K K	G G	A B	F F	F S	S S	I I	B2B2	I T	a--d-	g -	--cde-g-i-	mno	- --	---	a
00-34519	pd38	D F2	K K	I I	A B	F F	F F	F F	I I	B1B1	T U	a--d-	- a	-bcd--gh	- m--	- --	--c	a
00-34521	pd38	F2R	K K	I I	A B	F S	F F	S S	I I	B1B1	K S	-b---	- a	---d----	k ---	- a-	--c	a
00-34522	pd38	D2F2	K K	I I	B B	F S	F S	S S	I I	B1B1	I L	-----	- a	a--d----	k ---	- --	--c	-
00-34523	pd38	D D	K S	G I	B B	F F	F S	S S	I I	B1B1	S S	a--d-	- a	--c---g-	- m--	- a-	---	-
00-34524	pd38	F2O	K K	G G	B B	S S	S S	S S	I I	B1B1	I I	-b---	- a	--cd--gh	- m--	- --	---	-
00-34525	pd38	D F2	K K	I R	A B	F F	F F	S S	I I	B1B1	K L	a--d-	- a	--cde-g-ik	mn-	- ab	abc	a
00-34526	pd38	D H1	K S	I I	B B	F F	F F	S S	I I	B2B2	U U	a--d-	- a	--c---g-	- m--	- --	---	a
00-34527	pd38	F2F2	K K	I I	A B	F F	F F	F S	I I	B1B1	S S	a--d-	- a	--cde-g-i-	mno	- a-	---	-
00-34528	pd38	F2H1	K K	I I	A A	F F	F F	F S	I I	B1B1	S U	-----	- -	--cd--g-	- m -	- --	--c	a
00-34529	pd38	D2F2	K K	I I	B B	F S	F S	S S	I I	B1B2	S U	a--d-	- a	abcd----	- m--	- --	--c	-
00-34530	pd38	F2F2	K K	G I	B B	F S	F S	S S	I I	B1B1	U U	-b---	- a	--cd--gh	- m--	a - -	---	-
00-34531	pd38	F2H2	K K	I R	A B	F F	F S	S S	I I	B1B1	L U	a-cd-	- a	---d----	k ---	- --	---	a
00-34532	pd38	D2F2	K K	G I	B B	F S	F S	S S	I I	B2B2	S U	-b---	- a	a--d--gh	- m--	- a-	-b-	-
00-34533	pd38	F2H1	K K	G I	B B	F F	F F	S S	I I	B2B2	N S	a--d-	- a	-bc---g-	- m--	- a-	--c	-
00-34534	pd38	F2O	K K	G I	B B	F S	F F	S S	I I	B1B2	G L	a-cd-	- a	a-cd--g-	- m--	- --	---	-
00-34535	pd38	F2H1	K S	I I	B B	S S	F F	S S	I I	B1B1	U U	--c--	- a	a-cde-g-i-	mn-	a a-	---	-
00-34536	pd38	D2F2	K K	I I	B B	F S	F S	S S	I I	B2B2	L U	-b---	- a	-bc--f--	- m--	- --	--c	-
00-34537	pd38	F2H2	K K	I I	A B	F F	F F	F S	I I	B1B1	U U	a--d-	- a	---d--gh	- m--	- a-	--c	a
00-34538	pd38	F2F2	K S	I I	B B	S S	F S	S S	I I	B1B1	L S	-b---	- a	a--de---	- --o	- a-	--c	-
00-34539	pd38	F2R	K K	G I	B B	F F	F F	S S	I I	B1B2	L N	a--d-	g a	--cde-g-ik	mn-	- -b	--c	a
00-34540	pd38	D F2	K K	G I	B B	F S	F S	S S	I I	B2B2	L U	a--d-	- a	-bcd----	- mn-	- --	---	-
00-34541	pd38	O O	K S	I I	B B	F S	F F	S S	I I	B1B1	L S	a--d-	- a	abcd----	- m--	- a-	---	-
00-34542	pd38	F2F2	F K	I I	B B	F F	F F	S S	I I	B1B2	L U	-bc--	- a	a--d----	k ---	- ab	--c	a
00-34543	pd38	D H2	F K	I I	B B	F S	F S	F S	F I	B2B2	L U	-b---	- a	--c-e-g-i-	mn-	- a-	---	a
00-34544	pd38	H2H2	K K	I I	B B	F S	F S	S S	I I	B2B2	L U	-bc--	- a	--cde-g-ik	mn-	- --	---	a
00-34545	pd38	D R	K K	I I	B B	F F	F F	S S	I I	B2B2	L L	a--d-	- a	---d-f--	k ---	- a-	--c	-
00-34546	pd38	D F2	K K	F I	A A	F F	F F	F S	I I	B1B1	L U	a--d-	- a	a--d----	- ---	- a-	--c	a
00-34547	pd38	D H2	F K	I I	A B	S S	F F	S S	I I	B2B2	L T	a--d-	- a	--cde-g-ik	mn-	- ab	--c	a

00-34548	pd38	D H2	K K	G I	A B	F F	F F	S S	I I	B1B2	I U	a--d-	- a	a--de---	- --o	- -b	---	a
00-34549	pd38	F2F2	K S	I R	B B	F F	F S	S S	I I	B1B2	L S	a--d-	- a	--c-e-g-i-	mn-	- a-	-b-	a
00-34553	pd38	F2F2	K K	I I	B B	F S	F F	F S	I I	B1B2	N S	a--d-	- -	-bc---g-	- m--	- a-	---	a
00-34554	pd38	F2F2	K K	I I	A B	F S	F F	S S	I I	B1B1	L U	a--d-	- a	---d----	k ---	- a --	---	-
00-34555	pd38	F2F2	K K	I I	A B	F S	S S	S S	I I	B1B1	T U	a--d-	- a	---de---	k --o	- a-	---	-
00-34557	pd38	D D	K S	I R	B B	F F	F F	S S	I I	B1B1	L U	a--d-	- a	--cde-g-i-	mnno	- -b	-b-	a
01-00630	pd38	H2O	K K	H L	B B	F F	F F	S S	I I	B1B2	L T	a--d-	g a	-bc-----	- m--	- a-	---	-
01-00631	pd38	D F2	K K	L R	B B	F F	F S	S S	I I	B1B1	L L	-----	- a	--cde-g-	- mn-	- a-	---	a
01-00632	pd38	R R	K K	I I	B B	F F	F F	S S	I I	B1B1	L U	a--d-	- a	---d-f--	k ---	- - -	---	a
01-00633	pd38	R R	K K	I I	A A	F F	F F	S S	I I	B1B2	L L	a--d-	- a	---de---	- --o	a --	abc	-
01-00634	pd38	F2F2	K K	I L	A B	F F	F F	S S	I I	B1B1	G L	a--d-	- -	--c-e-g-	- mn-	- - -	---	-
01-00635	pd38	F2F2	K K	I I	B B	F F	F F	S S	F F	B1B1	T U	a--d-	- a	---def--	k ---	- a-	--c	a
01-00636	pd38	H2O	K S	I I	B B	F F	F F	S S	I I	B1B1	G L	--c--	- a	---d--gh	- mn-	a --	---	-
01-00637	pd38	H1H2	K K	F I	A B	F F	F F	F S	I I	B1B1	T U	a--d-	- -	---de---	- --o	- - -	---	a
01-00638	pd38	D F2	K S	F I	B B	F F	F F	S S	I I	B1B2	T U	a--d-	- a	--c---g-	- m--	- a-	---	-
01-00639	pd38	F2O	K K	I I	A B	F S	F S	S S	I I	B1B1	U U	-b---	- a	--cd--gh	- m--	a --	-b-	-
01-00640	pd38	D H2	K K	F I	A B	F F	F F	S S	I I	B1B2	L T	ab-d-	- a	a--de---	- - - -	- - -	--c	a
01-00641	pd38	H1H2	F K	I I	A B	F F	F F	S S	I I	B1B1	P U	a--d-	- a	---d--gh	- m--	- - -	---	a
01-00642	pd38	D H2	K K	I I	A B	F S	F F	F S	I I	B1B2	L T	-----	- a	a-cde-g-	- mn-	- - -	abc	a
01-00643	pd38	O O	K K	F I	A A	F F	F F	S S	I I	B1B2	L L	a--d-	- a	--cde-g-	- m-o	a a-	---	-
01-00644	pd38	D F2	K K	I L	A B	F F	F F	F S	I I	B1B1	S S	a--d-	- a	--cde-g-	- mno	- a-	--c	-
01-00645	pd38	F2F2	K K	L L	A A	F F	F F	S S	I I	B1B1	S S	--c--	- -	-bc---g-	- m--	- a-	---	-
01-00646	pd38	F2H2	K K	F I	A B	F F	F F	F S	I I	B1B1	S S	a--d-	- a	---de-gh	- m--	- a-	---	a
01-00647	pd38	F2H1	K K	I M	B B	F F	F F	S S	I I	B1B2	S U	a--d-	- a	--c---g-	- m--	- a-	--c	a
01-00648	pd38	D F2	K K	F I	B B	F F	F F	S S	I I	B2B2	N S	-----	- -	-bcd----	k m--	- a-	--c	-
01-00649	pd38	R R	K K	I I	A B	F F	F F	S S	I I	B1B2	G L	a--d-	- a	---de---	- --o	a --	---	a
01-00650	pd38	R R	K K	I I	A A	F F	F F	S S	I I	B1B1	H L	-b---	- a	---de---	- --o	- a-	abc	a
01-00651	pd38	F2F2	K S	I I	A B	F S	F F	S S	I I	B1B2	H U	-bc--	- a	--cde-g-	k mn-	- - -	--c	-
01-00652	pd38	F2H1	K S	I I	B B	F S	F S	S S	I I	B1B1	T U	ab-d-	- a	a--d----	- -n-	- - -	--c	-
01-00673	pd38	D D	K K	F L	A B	F F	F F	S S	I I	B1B2	L S	a--d-	- a	-bc---g-	- m--	- a-	--c	-
01-00674	pd38	F2F2	K K	I L	B B	F F	F F	F S	I I	B1B1	L L	a--d-	- a	abcd----	- m--	- a-	--c	-
01-00675	pd38	F2F2	K K	I L	A B	F F	F F	F S	F I	B1B1	S T	--c--	- -	-bcde---	- m--	- a-	--c	a
01-00676	pd38	D F2	K K	M M	B B	F F	F F	F F	I I	B1B1	S S	a--d-	- a	-bc-e-g-	- mn-	- - -	--c	-
01-00677	pd38	D F2	K K	G L	A B	F F	F F	F F	I I	B1B2	G L	a--d-	- a	-bc---g-	- m--	- a-	--c	a
01-00678	pd38	D2F2	K S	I I	B B	F S	F S	S S	I I	B1B1	I L	-b---	- a	a--de---	- --o	- a-	-b-	-
01-00679	pd38	F2F2	K K	I M	A A	F F	F F	F S	I I	B1B1	S S	a--d-	- a	--c-e-g-	- mn-	- - -	--c	-
01-00680	pd38	D F2	K K	I R	B B	F F	F F	S S	I I	B1B1	K L	a--d-	- a	---d-f--	k ---	- a-	abc	a
01-00681	pd38	D F2	K S	I R	A B	F F	F S	S S	I I	B1B2	L S	a--d-	- a	--cd--g-	k m--	- ab	abc	a
01-00682	pd38	F2F2	K K	I L	A B	F F	F F	F S	I I	B1B1	S S	a--d-	- a	-bc-e-g-	- mn-	- a-	---	-
01-00683	pd38	F2O	K K	I L	A A	F F	F F	S S	I I	B1B1	G G	-b---	- -	--c-e-g-	- mn-	- a-	---	-
01-00684	pd38	F2F2	K K	I L	A A	F F	F F	F F	I I	B1B1	S S	-----	- a	-bc-e-g-	- mn-	- a-	---	-
01-00685	pd38	D O	K K	I I	A B	F F	F F	S S	I I	B1B2	L S	ab-d-	g -	--cd--gh	- m--	- a-	-b-	-
01-00686	pd38	F2H2	K K	I I	A B	F F	F F	S S	I I	B1B1	L U	a--d-	- a	a-cd--g-	- m--	- a-	--c	a
01-00687	pd38	D F2	K K	O R	A A	F F	F F	S S	I I	B1B1	K S	a--d-	- a	--cde-g-	k mn-	- -b	-b-	a
01-00688	pd38	F2F2	K S	I I	A B	F S	F F	S S	I I	B1B2	L U	a--d-	- a	---d----	k ---	- a-	--c	-

01-00689	pd38	R R	K K	I I	A B	F F	F S	S S	I I	B1B1	K L	-b---	- a	---d----	- - - -	- a-	abc a
01-00690	pd38	D F2	K K	G I	B B	F F	F F	S S	I S	B1B2	N T	a--d-	- a	-bc---g-	- m--	- a-	---c -
01-00691	pd38	D F2	K K	I L	A B	F F	F F	S S	I I	B1B1	S T	a--d-	- a	-bcde---	- m-o	- ab	---c a
01-00692	pd38	F2O	K K	L L	A A	F F	F F	F S	I I	B1B1	G L	ab-d-	- -	---c-e-g-	- mn-	- a-	---- -
01-00693	pd38	F2H2	K K	I L	B B	F F	F F	S S	I I	B1B2	P S	--c--	- a	---cde-gh	- mn-	- a-	---- -
01-00694	pd38	F2H2	F K	I I	A B	F F	F F	F S	I I	B1B1	P S	a-cd-	- -	-bcd--gh	- m--	- --	---- -
01-00695	pd38	D F2	K K	I L	A B	F S	S S	S S	I I	B1B2	T U	a--d-	- a	---cd--g-	k m--	- a-	--- a
01-00696	pd38	F2F2	K K	I I	B B	F F	F F	S S	I I	B1B2	L L	a--d-	- a	---d----	k ---	- ab	---c -

Jackies Butte

00-34506	jb39	D F2	F K	G I	B B	F F	F S	S S	I I	B1B1	S W	a-cd-	- a	---d--gh	- m--	- a-	---
00-34508	jb39	D F2	F F	I I	B B	F F	F F	S S	I I	B1B1	L W	a--d-	- a	---d-f--	k ---	- --	---
00-34510	jb39	D F2	K K	I I	B B	F S	F F	S S	I I	B1B2	I I	a-cd-	g a	-bc-e-g-i-	mn-	- a-	--c -
00-34512	jb39	F2H2	K K	I I	B B	F F	F S	S S	I I	B1B2	U W	a--d-	- a	a--d-f--	k ---	- --	---
00-34514	jb39	D F2	K K	I I	A A	F F	F F	S S	I I	B1B1	U U	--c--	- -	-bc---g-	- m--	- --	--c -
00-34516	jb39	D H2	K K	I I	B B	F F	F S	S S	I I	B1B1	L P	a--d-	- a	--cd-fg-	k m--	- --	---
00-34520	jb39	D F2	K K	I I	B B	F F	F S	S S	I I	B1B1	P W	a--d-	- a	---d--gh	k m--	- a-	---
00-34550	jb39	F2H2	F K	I I	A B	F F	F F	S S	I I	B1B1	U W	a--d-	- -	---de---	k --O	- a-	--- a
00-34551	jb39	F2F2	K K	I I	B B	F F	F F	S S	I I	B1B1	L L2	--c--	- -	--cd-fgh	- m--	- a-	--- a
00-34552	jb39	D D	K K	I I	B B	F F	F F	S S	I I	B1B1	L U	-bc--	- -	---d-fgh	k m--	- --	--- a
00-34556	jb39	D F2	K K	I I	B B	F F	F F	S S	I I	B1B1	N P	a--d-	- a	-bcd----	k m--	- a-	---
01-00653	jb39	D H2	K K	I R	A A	F F	F S	S S	I I	B2B2	L L2	-bc--	- -	-bcd----	- m	- --	--- a
01-00654	jb39	D D	F K	I I	B B	F F	F F	S S	I I	B1B2	L P	a--d-	- a	---d-f--	k ---	- a-	---
01-00655	jb39	F2F2	K K	I I	B B	F F	F F	S S	I I	B1B2	P U	a--d-	- a	---d-f--	k ---	- --	---
01-00656	jb39	F2H2	K K	F I	B B	F F	S S	S S	I I	B1B1	T T	a--d-	- a	-bcd--gh	- m--	- --	--- a
01-00657	jb39	D F2	K K	I I	B B	F F	F F	S S	I I	B1B1	L P	a--d-	- -	--cd--g-	k m--	- a-	---
01-00658	jb39	H2H2	K K	G I	A B	F F	F F	S S	I I	B1B2	H U	-----	- a	a--d----	- ---	- a-	---
01-00659	jb39	D F2	F K	I I	A B	F F	F F	S S	I I	B1B2	L P	a--d-	- -	---d-f--	k ---	- a-	---
01-00660	jb39	F2F2	F K	I I	B B	F F	F F	S S	I I	B1B1	P U	a--d-	- -	--cd-f--	k ---	- a-	---
01-00661	jb39	D F2	K K	I I	A A	F F	F F	S S	I I	B1B1	L2U	-bc--	- -	---d-fgh	k m--	- --	--- a
01-00662	jb39	D D	K K	I I	B B	F F	F S	F S	I I	B1B1	N S	a--d-	- a	a--d--gh	- m--	- a-	abc a
01-00663	jb39	D F2	K K	I I	A B	F F	F S	S S	I I	B1B1	S W	a--d-	- a	---d-fgh	k m--	- --	---
01-00664	jb39	F2H2	K K	I I	A A	F F	F S	S S	I I	B1B2	L2U	-bc--	- -	-bc---g-	- m--	- --	--- a
01-00665	jb39	D F2	K K	I I	B B	F F	F F	S S	I I	B1B1	L P	a--d-	- -	---d-f--	k ---	- a-	--c a
01-00666	jb39	D D	F K	I I	A B	F F	F F	S S	I I	B1B2	L U	a--d-	- a	---d-f--	k ---	- a-	--c a
01-00667	jb39	D F2	K K	I I	A B	F F	F F	S S	I I	B1B2	L P	a--d-	- a	---d-f--	k ---	- a-	---
01-00668	jb39	D H2	F K	I I	A A	F F	F S	S S	I I	B2B2	P W	-bc--	- a	-bcd----	k m--	- --	--- a
01-00669	jb39	D F2	F F	I I	B B	F F	F F	S S	I I	B1B1	L2P	a--d-	- -	-bcd-f--	k m--	- a-	--c -
01-00670	jb39	D H2	K K	I M	B B	F F	F S	S S	I I	B1B2	S S	-----	- a	--cd-f--	k ---	- -b	---
01-00671	jb39	D H2	K K	I I	B B	F F	F S	S S	I I	B1B1	P T	a--d-	- a	-bcd--gh	- m--	- --	--- a
01-00672	jb39	D F2	K K	F I	B B	F F	F S	S S	F I	B1B1	N P	a--d-	- a	---d--gh	k m--	- a-	abc a

Alvord Tule Springs

01-02823	at41	F2F2	K K	I I	A B	F S	F S	S S	I I	A2B2	L L	--c--	- a	--c---g-	- m--	- a-	---
01-02824	at41	R R	K K	I I	B B	F F	F F	S S	I I	B2B2	L N	-bc--	- a	---d----	k ---	- a-	--c -
01-02825	at41	D H2	K K	H H	A A	S S	F F	S S	I I	B1B1	N N	a-cd-	- a	--cde-g-	- m-o	- --	--c a
01-02826	at41	D F2	K K	I I	B B	F F	F S	S S	I I	B1B2	F L	-----	- a	a-cde-g-	- mn-	- --	--c -
01-02827	at41	F2H2	K K	I I	A B	F F	F F	S S	I I	B1B1	L L	a--d-	- a	a--d--gh	- m--	- a-	--c -
01-02828	at41	D F2	K K	I I	B B	F S	F S	S S	I I	B1B1	L S	-----	- a	--cd--gh	- m--	- --	---
01-02829	at41	F2H2	K K	F I	A B	F S	F F	S S	I I	A2B2	I S	a--d-	- a	a--d--gh	- m--	- a-	---
01-02830	at41	D H2	K K	F I	A B	F S	F S	S S	I I	B1B1	* *	-bc--	- a	---de---	k --o	- --	--- a
01-02831	at41	H2H2	K K	G I	B B	F F	F F	S S	I I	B1B1	L L	--c--	- a	a--d----	- ---	- --	--c -
01-02832	at41	F2R	K K	F I	A B	F S	F F	S S	I I	A2B2	L N	ab-d-	- a	---d----	k ---	- a-	---
01-02833	at41	D F2	K K	R R	A B	S S	F S	S S	I I	B1B2	L L	a-cd-	- a	a--d----	- ---	- a-	--c -
01-02834	at41	F2F2	K K	O O	B B	F F	F S	S S	I I	B1B1	I L2	a--d-	- a	---d----	k ---	- --	---
01-02835	at41	F2M	F F	I I	B B	F F	F F	S S	I I	B1B1	L N	-b---	- a	-bcd----	k m--	- a-	--- a
01-02836	at41	F1F2	F K	I I	A B	F F	F F	S S	I I	B1B1	L N	ab-d-	g a	abcd----	- m--	- a-	---
01-02837	at41	H2R	K K	I I	A B	S S	F F	S S	I I	B2B2	I L2	--c--	- a	a--d----	k ---	- a-	---
01-02838	at41	F2F2	K K	I I	A B	F F	F F	S S	I I	B1B2	L2N	a--d-	- a	a--d----	k ---	- a-	---
01-02839	at41	F2F2	K K	I I	A B	F F	F S	S S	I I	B1B2	F L2	-b---	- a	a--d----	- ---	- a-	--c -
01-02840	at41	F1F2	F K	I I	B B	F F	S S	S S	I I	B1B2	G L	a--d-	g a	abcd----	- m--	- a-	--c a
01-02841	at41	F2F2	K K	I I	B B	F F	F F	S S	I I	B1B1	L L	a--d-	- a	---d--gh	- mn-	- --	abc -
01-02842	at41	H2H2	K K	I I	A B	F S	F F	S S	I I	B1B2	N O	a-cd-	- a	--cd--gh	- m--	- a-	--c -

Coyote Lake

01-02843	c142	H2R	K K	I I	A B	F F	F F	S S	S S	B1B2	L L2	a--d-	- a	---de---	k --o	- --	abc -
01-02844	c142	D F2	F K	I I	B B	F S	F S	S S	I I	B2B2	L L	a--d-	- a	-bc-e-g-	- mn-	- a-	--- -
01-02845	c142	F2F2	K K	I I	A B	F S	F F	S S	I I	B2B2	I U	a--d-	- a	a-cdefg-	- m--	- a-	-b- -
01-02846	c142	F2F2	K K	I S	A A	F S	F F	F S	I I	B2B2	L L	a--d-	- a	--cde-g-	- mn-	- a-	--- -
01-02847	c142	F2R	K K	I I	A B	F S	F F	S S	I I	B2B2	I L	a--d-	-	a--d----	k ---	- --	-bc -
01-02848	c142	H2R	K K	F I	B B	F S	F F	S S	I I	B1B2	L L	-b---	- a	---de-gh	- m-o	- --	--- -
01-02849	c142	F1F2	K K	G I	A A	F S	F S	S S	I I	B1B1	I L	a--d-	- a	a--d--gh	- m--	- a-	---c -
01-02850	c142	F2O	K K	I I	A B	F S	F F	F S	I I	B1B2	L N	-bc--	- a	---de---	k --o	- a-	--- -
01-02851	c142	F2F2	K K	I I	B B	F S	F F	S S	I I	B1B2	K L	-b---	- a	---d--gh	- m--	- a-	---c -
01-02852	c142	F2R	K K	I I	B B	F F	F F	S S	I I	B1B1	L L	ab-d-	- a	a--d----	k ---	- a-	--- -
01-02853	c142	F2H2	K K	I I	B B	F S	S S	S S	I I	B1B2	L L	-bc--	- a	a--d----	k ---	- a-	-b- -
01-02854	c142	F2F2	K K	I I	A B	F F	F F	S S	I I	B2B2	L2L2	ab-d-	-	--cd--g-	- mn-	- a-	---c a
01-02855	c142	D R	F K	I I	A B	S S	F F	S S	I I	B2B2	L L	a--d-	- a	-bc---g-	- m--	- --	--- -
01-02856	c142	F2R	K K	I I	A B	F S	F F	F S	I I	B2B2	L L	a--d-	- a	--cde-g-	- mn-	- --	--- -
01-02857	c142	F2F2	K K	I I	A B	F F	F S	S S	S S	B1B2	L2L2	a--d-	- a	--c-efg-	- m--	- a-	---c a
01-02858	c142	R R	K K	I I	B B	F F	F F	S S	I I	B2B2	L L	a-cd-	g a	-bc-efg-	- m--	- a-	---c a
01-02859	c142	F2R	K K	I I	A A	S S	F F	S S	I I	B2B2	L L	a-cd-	- a	--cde-g-	- m--	- a-	--- -
01-02860	c142	D H2	K K	F I	B B	F F	F F	S S	I I	B1B1	L L	-b---	- a	a--d--gh	- m--	- --	---c -
01-02861	c142	F2H2	K K	I I	B B	F S	F F	S S	I I	B1B1	L L	-b---	- a	a-cd--g-	- m--	- a-	--- -
01-02862	c142	F2R	K K	L R	A B	S S	F F	S S	I I	B1B1	L L	a-cd-	- a	a--d----	- ---	- a-	abc -
01-02863	c142	F2H2	K K	I I	B B	F F	F F	S S	I I	B1B1	L L	a--d-	- a	--cd--gh	- m--	- ab	---c a
01-02864	c142	D R	K K	I R	B B	F S	F F	S S	I I	B1B2	L U	ab-d-	- a	a--d----	- ---	- a-	abc -
01-02865	c142	R R	K K	I L	B B	F F	F F	S S	I I	B1B1	U U	a-cd-	- a	a--d----	- ---	- --	abc -
01-02866	c142	F2H2	K K	I L	B B	F F	F F	S S	I I	B1B1	L U	a--d-	- a	a--d--gh	- m--	- a-	---c a
01-02867	c142	F2F2	K K	I I	B B	F F	F F	S S	I I	B1B1	L U	a--d-	-	a-cd--g-	- m--	- --	--- -
01-02868	c142	D R	K K	I I	B B	F F	F F	S S	I I	B1B2	L L	--c--	- a	a--d----	- ---	- --	abc -
01-02869	c142	R R	K K	I I	B B	F S	F S	S S	I I	B2B2	I L	a--d-	- a	--cd--gh	- m--	- a-	--- -
01-02870	c142	H2H2	K K	I I	B B	F S	F S	S S	I I	B1B2	L S	--c--	-	a--d--gh	- m--	- --	--- -
01-02871	c142	H2R	K K	I I	B B	F F	F S	S S	I I	B1B2	U U	a--d-	- a	a--d----	- ---	- --	abc -
01-02872	c142	F2O	K K	F I	A B	F S	F S	S S	I I	B1B1	I L	a-cd-	- a	abcd----	- m--	- --	--- -
01-02873	c142	F2R	K K	F I	A B	F S	F S	S S	I I	B1B2	I N	--c--	- a	a--d----	k ---	- a-	--- -
01-02874	c142	D R	K K	I I	B B	F F	F F	S S	I I	B1B1	F L	a--d-	-	a--d----	k ---	- --	--- -
01-02875	c142	F2F2	K K	F I	A B	S S	F S	S S	I I	B1B2	I L	--c--	- a	a--d--gh	- m--	- --	--- -
01-02876	c142	D R	K K	I I	B B	F S	F F	S S	I I	B1B2	I U	-----	-	a--d--gh	- m--	- --	--- -
01-02877	c142	F2R	K K	F I	A B	F S	F S	S S	I I	B1B2	I S	--c--	-	-bcd--gh	- m--	- a-	--- a
01-02878	c142	F2H2	K K	I L	A B	F S	F F	S S	I I	B1B1	S U	a-cd-	- a	a--d----	- ---	- a-	--- -
01-02879	c142	F2H2	K K	I L	B B	F F	F F	S S	I I	B1B1	L S	a-cd-	- a	a--d--gh	- m--	- --	--- -
01-02880	c142	F2H2	K K	I R	B B	S S	F S	S S	I I	B1B2	I L	-----	- a	--cd--gh	- m--	- --	--- -
01-02881	c142	F2F2	K K	I I	A B	F S	F S	F S	I I	B1B2	L2S	--c--	-	--cdefg-	k m--	- a-	-b- a
01-02882	c142	F2O	K K	I I	A B	F S	F S	F S	I S	B1B2	S S	--c--	- a	--cd--g-	k m--	- --	--- -
01-02883	c142	F2F2	K K	G G	B B	S S	F S	S S	I I	B1B2	I S	-----	-	a--d--gh	- m--	- a-	--- -
01-02884	c142	H2R	K K	I M	B B	F F	F F	S S	I I	B1B1	L S	--c--	- a	a--d--gh	- m--	- --	--- -
01-02885	c142	F2H2	K K	F I	A B	S S	S S	S S	I I	B1B2	L O	a--d-	- a	a-cd--g-	- m--	- --	--- -

01-02886	cl42	D H2	K K	I I	B B	F F	F F	S S	I I	B1B2	F L	--c--	- a	a-cde-g-	- mn-	- --	---	-	
01-02887	cl42	H2R	K K	I R	B B	S S	F S	S S	I I	B1B2	I L	----	- a	--c-e-g-	- mn-	- --	---	a	
01-02888	cl42	F2H2	K K	I I	B B	F F	F F	S S	I S	B1B1	L O	a--d-	- a	--cd--gh	- m--	- --	---	-c-	
01-02889	cl42	F2O	K K	F I	B B	F S	S S	S S	I I	B1B1	I L	ab-d-	- a	--c---g-	- m--	- --	---	-	
01-02890	cl42	H2O	K K	I I	B B	F F	F F	S S	I I	B1B2	L O	a-cd-	- a	a--d--gh	- m--	- --	---	-	
01-02891	cl42	F2H2	K K	I L	B B	F F	F F	S S	I I	B1B1	L U	a--d-	- a	a-cd--g-	- m--	- a-	---	-	
01-02892	cl42	R R	K K	I L	B B	F F	F S	S S	I I	B1B2	L U	----	- a	a-cd--g-	- m--	- --	---	-	
01-02893	cl42	F2H2	K K	I L	B B	F F	F F	S S	I I	B1B2	L U	a--d-	- a	--c-e-g-	- mn-	- a-	---	-	
01-02894	cl42	F2H2	K K	I I	A B	F S	F F	S S	I S	B2B2	L2N	a--d-	- -	--cd--g-	- mn-	- a-	---	a	
01-02895	cl42	F2H2	K K	L L	B B	F S	F F	S S	I I	B1B2	I L	--c--	- a	a--d--gh	- m--	- --	---	-	
01-02896	cl42	F2F2	K K	F I	A B	F S	F S	S S	I I	B1B2	I L	--c--	- a	a--d---	k	---	- a-	---	-
01-02897	cl42	F2R	K K	F I	A B	S S	F S	S S	I S	B1B2	L O	a--d-	- a	a-cd--g-	- m--	- --	---	-	
01-02898	cl42	D R	K K	I I	B B	F F	F F	S S	I I	B1B2	F U	----	- a	a--d---	-	---	- --	---	-
01-02899	cl42	F2R	K K	I I	B B	F F	F S	S S	I I	B2B2	I S	--c--	- a	-bcd----	k m--	- a-	---	a	
01-02900	cl42	D O	K K	I I	A B	F F	F F	S S	I I	B1B2	L L	----	- -	--c---g-	- m--	- --	---	-c-	
01-03458	cl42	H2R	K K	I I	A B	F F	F F	S S	S S	B1B2	L L2	a--d-	- a	---de---	k	---	- --	---	-
01-03459	cl42	F2R	K K	I I	B B	F S	F F	S S	I I	B1B2	K L	-bc--	- a	--cdefgh	- m--	- --	---	-	
01-03460	cl42	D R	K K	I I	B B	F F	F F	S S	I I	B2B2	L L	a--d-	- a	--c-efg-	- mn-	- --	---	-	
01-03461	cl42	F2R	K K	I I	B B	F F	F F	S S	I I	B1B2	L S	a-cd-	- a	-bc-e-g-	- mn-	- --	---	-	
01-03462	cl42	H2H2	K K	G I	B B	F S	F F	S S	I I	B2B2	L L	a--d-	- a	--c---g-	- m--	- --	---	-	
01-03463	cl42	H2H2	K K	I I	B B	F S	S S	S S	I I	B1B2	I I	a--d-	- a	---d--gh	- m--	- -b	---c	a	
01-03464	cl42	F2H2	K K	G I	B B	S S	S S	S S	I S	B1B2	L2S	--c--	- a	--cd--gh	- m--	- --	---	a	
01-03465	cl42	F2O	F K	I I	A A	F S	F S	S S	I I	B1B1	L N	--c--	- a	a--de---	- -o	- --	---	-c-	
01-03466	cl42	F2F2	K K	I I	A A	F F	F S	S S	I S	B1B2	L2N	-bc--	- a	--cdefg-	k m--	- ab	-b-	-	
01-03467	cl42	F2O	K K	I I	A B	F S	F S	F S	I S	B1B1	L O	--c--	- a	--cde-g-	- m-o	- --	---	-bc-	
01-03468	cl42	R R	K K	I I	B B	F F	F F	S S	I I	B1B2	L S	ab-d-	- a	--cd--gh	- m--	- a-	---c	a	
01-03469	cl42	F2H2	K K	F I	B B	F F	F F	S S	I I	B1B2	K L	a--d-	- a	---d--gh	- m--	- --	---	-	
01-03470	cl42	F2R	K K	I I	B B	S S	F F	S S	I I	B1B1	L S	----	- a	a-cd--g-	- m--	- --	---	abc-	
01-03471	cl42	F2R	K K	I I	A B	F F	F F	F S	I S	B2B2	L L	a-cd-	- a	--cde-g-	- m--	- --	---	-	
01-03472	cl42	D D	K K	F F	B B	F F	F S	F S	I I	B1B1	N S	a--d-	- a	--cde-g-	- mn-	- a-	abc	a	

**PAISLEY DESERT
WILD HORSE
HERD MANAGEMENT AREA PLAN
Lakeview District
Lakeview Resource Area**

I. Introduction

This document provides management objectives and guidelines for managing wild horses on Bureau of Land Management (BLM) within the Paisley Desert Herd Management Area (HMA). Appropriate management level (AML) is expressed as a range. The upper limit represents the highest number of horses which will not degrade the rangeland resource and will provide for multiple use resource objectives. The lower limit represents the smallest number of horses which can maintain a healthy, self sustaining population of animals. The current AML of 60-152 horses was established in the Lakeview Resource Management Plan, 2003.

Authority for managing wild horses on BLM lands is established in Public Law 92-195, the Wild and Free Roaming Horses and Burros Act. Regulations for managing wild horses is established at Title 43 of the Code of Federal Regulations, Part 4700.

II. Location

The Paisley Desert HMA is located in south central Oregon. The HMA encompasses an area ten miles northeast of Paisley Oregon to 15 miles southeast of Christmas Valley, Oregon and is situated in the northwest portion of the Great Basin. The general areas within the HMA boundaries are often referred to as Sheeprock, St. Patrick's, Squaw Lakes and Vaughn.

Topography is rocky with a series of southeast/northwest trending rims separated by wide swales and lakebeds. Elevation ranges from 4750 feet to 5700 feet at Sheep Rock and 5950 feet above sea level on St. Patricks Mountain.

The area has a semiarid climate with long, cool, moist winters and short warm, dry summers. The average annual precipitation is between 8-12 inches, depending on elevation, with the majority of moisture coming in the winter and spring. Temperatures can range from 0 degrees Fahrenheit in the winter, to more than 90 degrees Fahrenheit in the summer.

III. Horse Background and History

The majority of wild free roaming horses in the Paisley Herd Area are descendants from horses on the surrounding private lands. The Bill Brown operation had over 10,000 head of horses at one time. Most of the solid colors of bay, brown and sorrel descended from Brown's horses and appear to have been mainly thoroughbred and Morgan breeding. Horses also drifted or were allowed to roam into the area from the XL, ZX and Viewpoint ranches. Gray horses were a favorite of the ZX Ranch at that time. No inventories of horse numbers or locations were done before 1971, and the history of the original herd is vague. The following statements were derived from public comments during planning stages of the 1976 Herd Area Plan: The highest number of horses, reported to be in the thousands occurred in the 1920's and 1930's. After intensive gathering by private individuals during the 1940s and 1950s, a low of 7

horses was reported. When the Wild Free Roaming Horses and Burros act passed in 1971 there were 81 horses in the area. Prior to the first BLM gather in 1976; 219 horses were found in the Herd Area (HA).

During the 1980s, several horses were introduced from other herds in Oregon. Although records are incomplete; several palominos, sorrels and pintos been moved to the Paisley HMA from other herds. In October of 1988 five horses from the South Steens and Kiger Herds were introduced to the Paisley area to replace horses that had died from lack of water. A few horses with Spanish horse characteristics were introduced from Beatys Butte and Riddle, and in 1988 and 2007. Currently the HMA has a wide variety of colors sizes and bloodlines.

IV. Population

A yearly census was completed for the HMA every year from 1971-1999 with the use of a fixed wing plane. After 1999 fewer censuses were done with a helicopter to get more accurate information on the census years. Table 1 represents the population record for the HMA.

Population Controls

Wild horses will be managed at population levels within the appropriate Management Level (AML). The AML for the Paisley Desert HMA was established at 60-150 horses in the Lakeview RMP, 2003.

A. Natural Controls

There are no known predators such as mountain lion predation in the HMA although the mountain lion population in Lake County has been increasing. Natural population loss is usually related to normal processes of old age, disease, injury etc.

B. Fertility Control

Fertility control may be used as a tool to reduce the rate of population growth when fertility control drugs and methods become available for management purposes or general use. Fertility control is limited to research at this time. If fertility controls are successful, the length of time between gathers could be increased. Porcine zona pellucida (PZP) is currently being researched for fertility control although other option may be available in the future. Generally fertility control of mares has been more effective than fertility control on stallions.

C. Gather and Removal

When the population level exceeds the upper end of AML and monitoring data indicates that excess horses are present; the excess horses will be gathered and removed. Wild horses may also be gathered and removed for the following reasons:

Emergencies: Wild fire and extreme drought are two examples which may require a removal of horses either for the safety of the horses or protection of resources. Emergencies normally require immediate action to protect the health and welfare of horse populations, other resources and habitat.

Strays: If wild horses stray outside the designated HMA they may be removed or relocated.

Water trapping was preferred method of gather described in the 1976 Herd Management Plan. Several of the main waterholes were fenced in the late 1970's with the intention of closing water off to all but the water traps at Fire Lake and Whiskey Lake.

Currently and in the future, effective gathering must include all options and the best method or combination of methods will be applied as needed. Acceptable capture methods are helicopter drive trapping, bait trapping and roping. Gathers are scheduled outside the main foaling season which is usually March 1- June 30 except for emergencies.

Helicopter and/or rider drive Trapping: This method uses a helicopter and or riders on horseback move wild horses into a temporary trap. This method is currently used most often by the BLM.

Bait trapping: Water, hay, grain or salt is used to lure horses to a temporary trap.

Roping is used by itself or in combination with the other trap methods, usually for small numbers of horses.

Table 1 Population Record

Year	Horse Numbers	Number Of Foals	Comments	Year	Horse Numbers	Number of Foals	Comments
1971	81	10		1990	99	11	
1972	121	32		1991	139	24	
1973	177	28		1992	203*	34	*Gather after census
1974	219	49		1993	77	77	
1975	288	68		1994	143	24	
1976	307	70		1995	172*		*Gather after census
1977	368*		*Gather after census	1996	103	21	
1978	137	19		1997	144	31	
1979	179	30		1998	142*		*Partial census plus 15 outside HMA
1980	215	37		1999	172	34	
1981	244*	47	*Gather after census	2000	369*	75	*Gather after census; 32 outside HMA
1982	70	17		2001	60		
1983	119	29		2002	168	30	
1984	147	28		2003	173*	27	*Emergency gather- *Mortality drought
1985	176	45		2004	72		
1986	286*		*Gather after census	2005	123	20	14 outside
1987	56*		*Horses introduced	2006	139	21	
1988	40*	9	*Mortality-drought	2007*	174	26	*7 introduced from Beatys Butte
1989	70	13		2008	200	30	
				2009	223	35	70 outside HMA

D. Humane Destruction

Euthanasia may be authorized for a wild horse as an act of mercy for any animal with conditions such as the following:

- displays a hopeless prognosis for life
- suffers from chronic or incurable disease or serious physical defect
- requires continuous treatment for the relief of pain and suffering
- incapable of maintaining a Henneke body condition score greater than two in a normal rangeland environment
- suffers from a traumatic injury or other condition that causes pain

V. Habitat

Approximately 31,860 acres of the original Herd Area (HA) was designated as an unoccupied portion of the HA in the 2003 Lakeview RMP. The Paisley Desert HMA has a long history of water shortage during drought years and horses tend to use the same territories repeatedly. Acreage within the HMA includes 303,526 acres of public land managed by the BLM and 5960 acres of unfenced private land.

There are few fences within the boundaries of the HMA. Pastures within allotments generally use rims as boundaries. The two interior fences are located on allotment boundaries of ZX Christmas Lake/ Sheeprock and Sheeprock/ Saint Patricks. The east boundary of the HMA is entirely fenced, while the north and west boundaries mainly rely on rims with some gap fencing.

A. Forage

Forage includes a variety of native grasses forbs and shrubs. The dominant plant community is Wyoming big sagebrush with understory grasses of needlegrasses, bluebunch wheatgrass and squirreltail. Horses seem have a high preference for Sandberg bluegrass in the spring. Small patches of salt desert shrub and black sagebrush are dispersed throughout the HMA and used by the horses.

B. Water

The main source of water is lakebed waterholes. These waterholes fill from surface runoff, rain and snowmelt. In years of normal precipitation the existing waterholes provide plenty of water for wild horses, wildlife and livestock. Horses also take advantage of free standing water after rain events and snow melt. Horses will use snow for water during the winter. During drought periods many water sources are lost and therefore; horses concentrate in the area where water remains. In severe or long term drought situations, horses have been in danger of completely running out of water.

C. Cover

Cover is provided by sagebrush stands and rock outcrops. A handful of juniper trees are present in the HMA, but horses tend to stay away from these areas.

VI. Livestock Grazing Use

Four livestock grazing allotments overlap with the HMA. Livestock grazing pastures are rotated, deferred or rested after use and therefore seldom conflict with wild horse use. The grazing season, AUM and allotment information is described in the following table.

Allotment Number	Allotment Name	Grazing season	Grazing system	AUMs Livestock	AUMs Wild Horses	
418	Squaw Lake	Fall/Winter	Dormant Season	834	35	
419	St Patrick	Spring	Early Use	750	58	
428	Sheeprock	Spring/Summer	Rest Rotation	4000	929	
10103	ZX Christmas Lake	Spring/Summer/Fall	Rest Rotation	7000*estimate Only part of the allotment in HMA	778	
				12,584	1800	

VII. Management Objectives/Actions

1. Manage wild horses to maintain a viable herd of approximately 60-150 healthy individuals within the following population estimates.

Year 1-70 Year 2-87 Year 3- 104 Year 4-125 Year 5-150

2. Develop a control program on a five year gather cycle to maintain wild horse numbers within the appropriate management level and within the boundaries of the HMA and/or reduce the number of gathers by slowing population growth.

3. Introduce horses from other Oregon herds or outside of Oregon as needed to maintain genetic diversity to the herd.

4. Manage wild horse grazing levels and distribution to ensure a thriving natural ecological balance and prevent deterioration of the rangeland habitat.

5. Maintain existing water developments to provide water for reliable habitat conditions

6. Add additional water and vegetation treatment projects to provide dependable water and reduce or eliminate the need for emergency gathers.

7. Maintain approximately a 50/50 ration of mares to studs to keep the average recruitment rate about 20% per year or less. Adjust mare to stud ratio as needed to reduce foal crop, lengthen the time between gathers and reduce the number of animals that go to the adoption and long term holding programs.

8. Maintain a diversity of animals in variety of colors with generally medium bone structure and good healthy conformation averaging 14-15 hands.

VIII. Recommended Improvement Projects

Several new reliable water sources are recommended to encourage horses to stay within HMA boundaries. Reliable water will reduce or eliminate the need for emergency gathers. Four wells distributed throughout the HMA would be the preferred means of water development. Solar powered wells are recommended for minimal ground disturbance during construction and to provide low energy consumption.

Installing cattleguards adjacent to county roads bordering the HMA may be necessary if horses continue to drift outside the boundaries. Cattleguards should be located where gates are continually left open.

See Map 2 for locations of recommended Range Improvements

IX. Monitoring

The Paisley Desert and adjacent areas will be censused at least once every four years to develop and adjust population estimates. Census methods that are the most accurate will usually be used although cost will be considered in determining the method used.

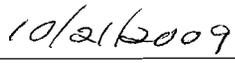
If funding becomes available, seasonal distribution maps will be generated to record movements and seasonal use areas within this HMA. Funding of a monthly fixed wing flight would be the most effective means of gathering data for these maps.

Vegetation monitoring studies that document wild horse utilization of forage plants will be done at a minimum of every three years and yearly if possible.

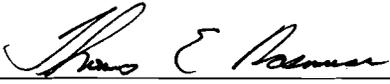
Signatures



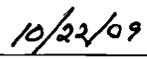
Theresa Romasko
Supervisory Natural Resource Specialist



Date

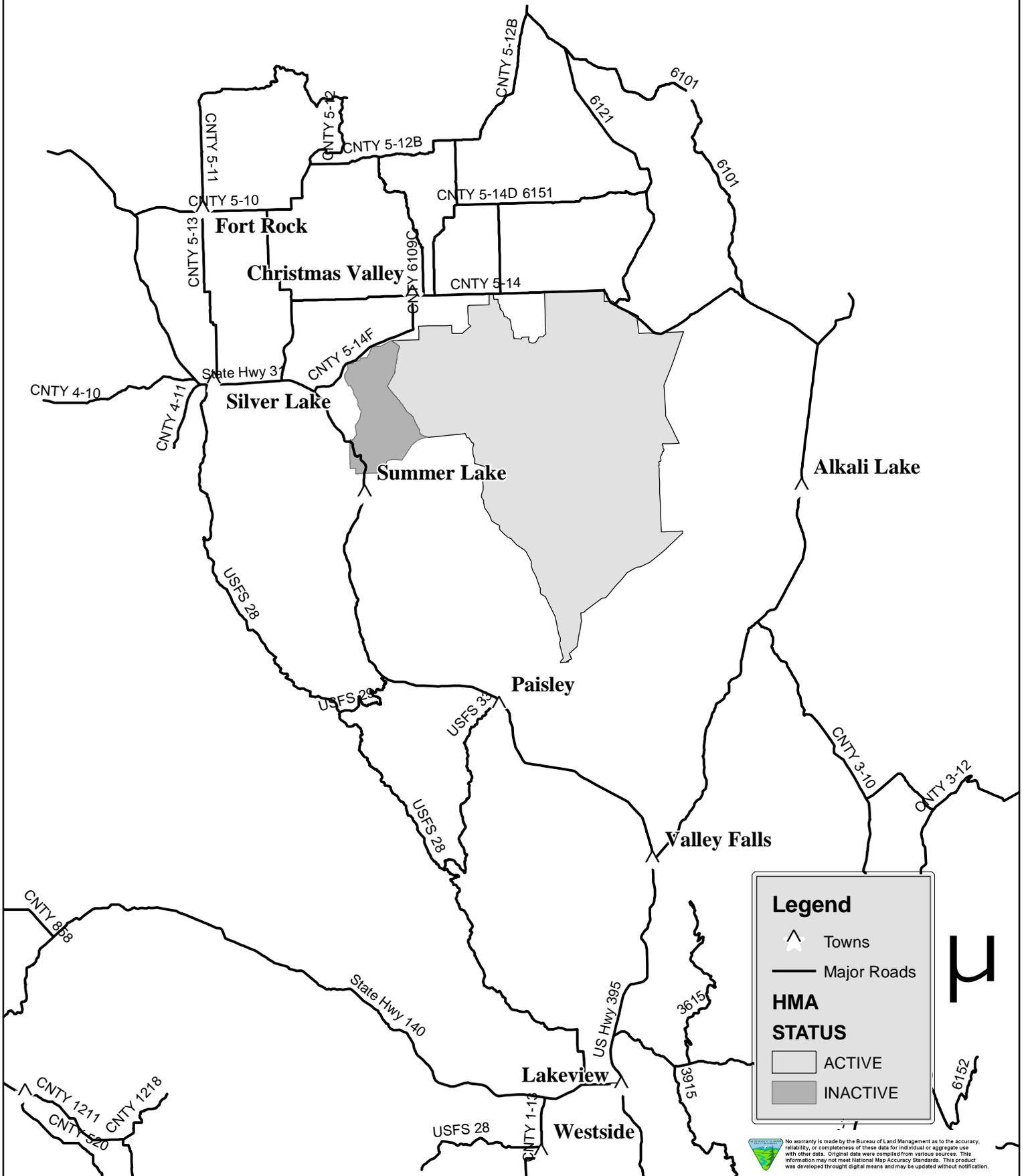


Thomas E. Rasmussen
Field Manager



Date

Map 1 Location Map Paisley Desert HMA



Legend

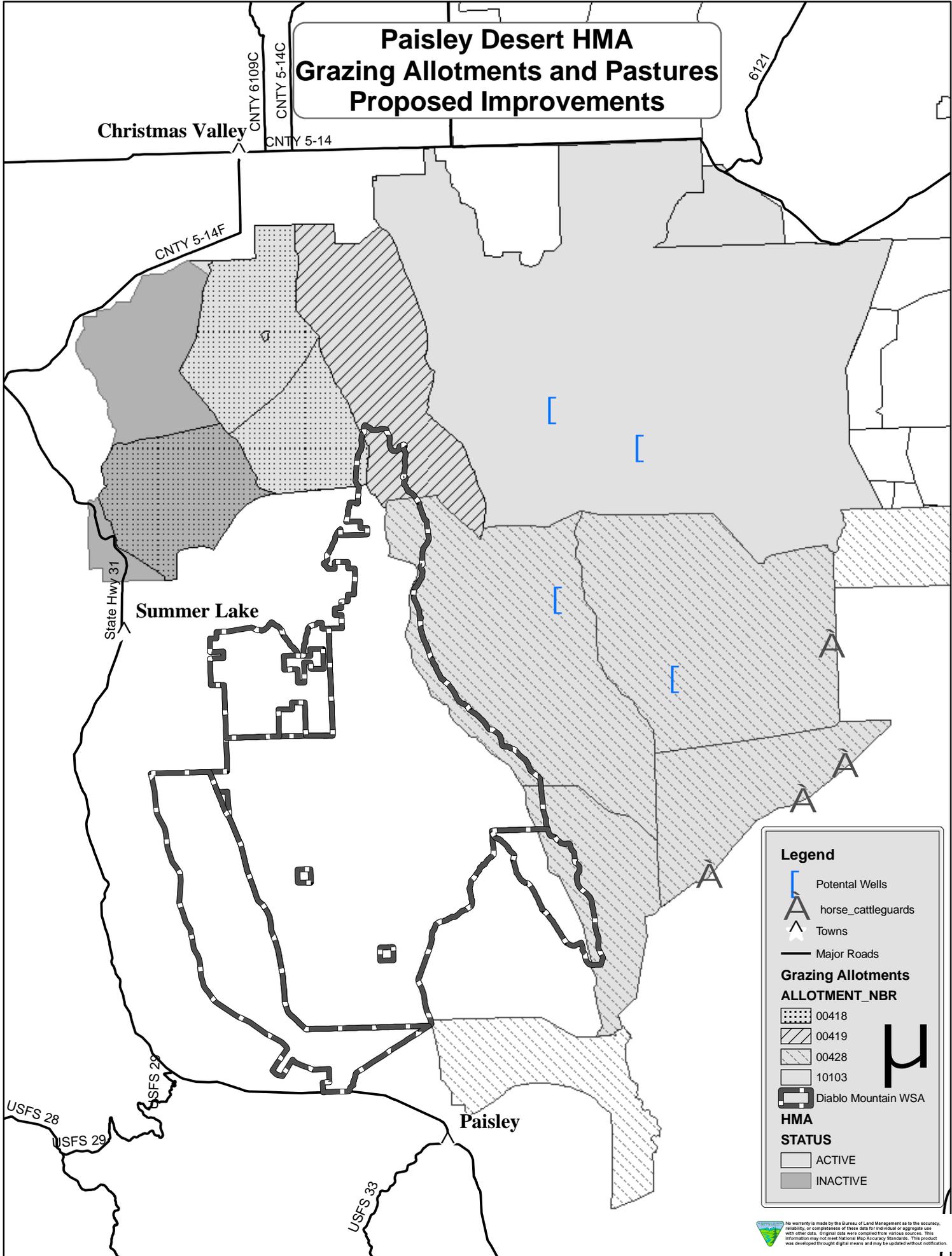
-  Towns
-  Major Roads

HMA STATUS

-  ACTIVE
-  INACTIVE

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Paisley Desert HMA Grazing Allotments and Pastures Proposed Improvements



Legend

- Potential Wells
- horse_cattleguards
- Towns
- Major Roads

Grazing Allotments

ALLOTMENT_NBR

- 00418
- 00419
- 00428
- 10103

Diablo Mountain WSA

HMA

STATUS

- ACTIVE
- INACTIVE

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Paisley Desert Herd Management Area (HMA)
And Surrounding Areas
Monitoring Summary 2009

This monitoring summary focuses on areas where wild horses are the grazing animals contributing the highest forage utilization in and surrounding the Paisley Desert HMA. Although livestock grazing was also authorized in parts of the HMA, grazed pastures are rested for at least one year following grazing use and often two years after grazing. In the Diablo Rim area, no livestock grazing was authorized in 2009.

Diablo Rim

Horses were found in the Diablo Rim area to the West of the HMA in 2008 by an Oregon Department of fish and Wildlife (ODF&W). The employee notified the Lakeview office with concerns about conflicts between wild horses and bighorn sheep, specifically the large number of animals in a relatively small area. Livestock grazing is not authorized and has not been authorized in this part of the Diablo Rim since 1992.

Diablo Rim was monitored during the fall of 2008 and spring and summer of 2009. Monitoring confirmed that forage utilization by wild horses was heavy in the vicinity of Brief waterhole, Cat Camp Draw and Slim Reservoir. Approximately 50 horses have been using this area and are traveling between Murphys and Whiskey Lakes inside the HMA to Diablo Rim outside the HMA.

Jug Mountain

1 gray mare is outside the HMA in the vicinity of Jug Mountain. This mare is likely to be without water when pipeline systems are turned off after livestock are removed.

Twin Buttes

About 20 horses are outside the HMA to the southeast in the Twin Buttes Allotment. Utilization by wild horses at this time is light.

General locations within the HMA

Burma Rim

Wild horse utilization is heavy in the Burma Rim area at Legal Water Hole, Burma Waterhole, Handy Waterhole and Deapoli Lake.

Sheep Rock

Utilization by wild horses is heavy in the Whiskey Lakes, Walking Plow and Dog Lake areas and moderate at King Dogs and East Tough Waterholes, ZX #7

Fire Lake

Utilization by wild horses is light in the Fire Lakes Area

Saint Patricks

Wild horses have historically not used the Saint Patricks area as much as Sheepprock, Burma and Fire Lake. A few horses have moved into Saint Patricks between 2008 and 2009. Wild horse utilization is currently light

Squaw Lake

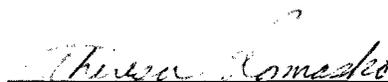
Wild horses have seldom been seen in the Squaw Lakes portion of the HMA and none were seen in 2009.

Summary

Wild horses in this HMA tend to use the same areas repeatedly yearlong and year after year. This is most evident in the spring when horses concentrate grazing on the bluegrass and throughout the year at water sources.

Wild horses have moved outside the HMA in areas that were not allocated to wild horses. In the Diablo Rim area this use may present a conflict with big horn sheep. In the seedings this may present a hazard to horses when water becomes unavailable after water stored in pipeline and trough systems dries up.

This monitoring summary indicates that wild horses are over utilizing parts of the HMA and are no longer in ecological balance with resources inside the HMA. Therefore an excess of wild horses is present and removal of some of the horses are necessary.



Theresa Romasko, Supervisory Natural Resource Specialist