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

Preliminary Environmental Assessment
DOI-BLM-CO-110-2011-0058-EA

Piceance-East Douglas Herd Management Area
Wild Horse Gather Plan

July 8, 2011

U.S. Department of the Interior
Bureau of Land Management
Northwest District - Colorado
White River Field Office
220 East Market Street
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BLM

NATIONAL SYSTEM OF PUBLIC LANDS

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1.1 INTRODUCTION & BACKGROUND

Introduction

The Bureau of Land Management (BLM) is reviewing the management of wild horses within the Piceance-East Douglas Herd Management Area (HMA), the North Piceance Herd Area (NPHA), and all those areas where wild horses have relocated, hereafter, referred to as the "analysis area" (Map 1-1). The analysis area is located entirely within Rio Blanco County, approximately 25 miles west and south of Meeker, Colorado and approximately 50 miles north and east of Grand Junction, Colorado (Map 1-2).

The analysis area comprises approximately 426,132 acres, which is approximately 16 percent of the entire lands within the White River Field Office. The HMA comprises about 190,130 acres of public and other land (public = 158,310; state = 5,330; and private = 26,490). The NPHA comprises about 89,286 acres of public and other land (public = 76,238; state = 0; and private = 13,048). The remaining acreage of the analysis area comprises 146,176 acres of public and other land (public = 129,602; state = 1,431; and private = 15,143). The NPHA and those other areas will be referred to as areas "outside the HMA."

The HMA provides forage and habitat for wild horses, wildlife including greater sage grouse, mule deer and elk. The predominant land uses within the HMA are livestock grazing, energy development, and recreation including hunting.

The analysis area contains many unique and important biological, geological, paleontological, scenic, and cultural resources; the BLM has designated several of these as special management areas for their protection. These include:

- Six Populations of Special Status Plants:
  Dudley Bluffs Twinpod, Narrow-stem Gilia, Piceance Bladderpod, Dudley Bluffs Bladderpod, Cathedral Bluffs Dwarf Gentian, and the Sun-Loving Meadowrue.
- Nine Areas of Critical Environmental Concern:
  Duck Creek – Threaten and Endangered (T/E) Plants and Cultural Resources
  Upper Greasewood – Remnant Native Vegetation (RNV), T/E Plants, Sensitive Plants.
  Lower Greasewood – Sensitive Plants and RNV
  East Douglas Creek/Soldier Creek – Biological Diversity and Riparian
  South Cathedral Bluffs – Sensitive Plants and RNV
  Coal Draw – Paleontology Resources
  Ryan Gulch – T/E Plants
  Dudley Bluffs – Remnant Native Vegetation (RNV), T/E Plants, Sensitive Plants
  Yanks Gulch – RNV, T/E Plants, Sensitive Plants
- One National Historic District:
  Canyon Pintado
- One Sage Grouse Population:
  Parachute-Piceance-Roan Sage-grouse

For the locations of the above resources, see Map 1-3 and Map 1-4.

Background

The White River Field Office (WRFO) has managed wild horses since the passage of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA).

In 1975, the BLM prepared the White River Resource Area (WRRA) Management Framework Plan (MFP) based on the information developed in the 1975 Unit Resource Analysis (URA). The 1975 URA identified two wild horse herd units, the Douglas Creek Herd Unit and the Piceance Basin Herd Unit. The 1975 Unit Resource Analysis further identified wild horse utilization/distribution problems resulting from human development and human population increases projected for the future. Based on this analysis the decision of the 1975 Land Use Plan was to: 1) Remove wild horses west of Douglas Creek, 2) Retain Wild Horses East of Douglas Creek, 3) Construct a fence along the Douglas Creek road (State Highway 139) from Rangely up East Douglas Creek."

From 1978 through 1980, another planning effort was undertaken to update the 1975 MFP. This update was driven by court ordered environmental impact statements requiring area specific analysis of the livestock grazing program. A 1980 URA again identified two wild horse herd units, the Douglas Creek Herd Unit and the Piceance Basin Herd Unit. Based on the 1980 URA the Piceance/East Douglas Area was selected for management of wild horses because of a "lower density of both developed and undeveloped energy resources than any other area within the two wild horse herd units" and, "[t]he topography of the proposed area is highly suited to the needs of wild horses... offers both summer and winter ranges and provides all other elements necessary for the survival of wild horses."

In 1985, the WRRA Piceance Basin Resource Management Plan (RMP) was developed for the Piceance Basin to analyze expected impacts resulting from oil shale development. Wild horse management would continue according to decisions approved in the 1981, Piceance-East Douglas Herd Management Area Plan.

The 1997 WRRA, Resource Area Management Plan, approved by the State Director, July 1, 1997, is the current land use plan for the WRRA. The decision for horse management was to "[m]anage for a wild horse herd of 95 to 140 wild horses on 190,130 acres within the Piceance-East Douglas Herd Management Area (PEDHMA) so that a thriving ecological balance is maintained for plant and animal species on that range." "The boundary of the PEDHMA will be expanded to include the Greasewood allotment (presently a part of the North Piceance Herd Area)." Management also concluded "[t]he North Piceance and West Douglas Herd Areas [would] be managed in the short-term (0-10) years) to provide forage for a herd of 0 to 50 horses in each herd area. The long term objective (+10 years) will be to remove all wild horses from these areas."

The Appropriate Management Level (AML) in the HMA was established as a population range of 135-235 wild horses in the 2002 Piceance-East Douglas Wild Horse Herd Management Area EA, #WR-02-049, following an in-depth analysis of habitat suitability, resource monitoring and population inventory data. The AML upper limit is the maximum number which can graze based on detailed analysis of the available water, forage, and other multiple uses. A Herd Management Area Plan (HMAP) established site-specific management and monitoring objectives for the herd and its habitat in 1981. The WRFO Wild Horse Program Analysis updated that plan and Operational Plan dated July 27, 1999.

A complete list of previous National Environmental Policy Act (NEPA) documents regarding overall management of wild horses within the analysis area is provided below.

1.2 PURPOSE AND NEED FOR THE ACTION

This Environmental Assessment (EA) is a site-specific analysis of potential impacts that could result with

the implementation of the Proposed Action or alternatives to the Proposed Action.

The purpose of the action is to address an overpopulation of wild horses and maintain and restore a thriving natural ecologic balance consistent with multiple uses, and to manage wild horses within designated management areas. Action is needed at this time to balance wild horse populations with other resources, restrict wild horses from areas where they were not "presently found" at the passage of the WFRHBA, and to manage wild horses within the area designated for long-term wild horse management.

Based on existing inventories inside the HMA, the BLM has identified a need to take action to balance wild horse populations with other resources, including wildlife habitat, livestock grazing, soil, water and vegetation resources. The BLM's determination of excess wild horses is based on evaluations of resource conditions, vegetation utilization, wild horse inventory data, livestock permitted use, livestock actual use reports, wildlife population data, and land use planning allocations. The BLM currently has not allocated forage to wild horses outside the Piceance-East Douglas Herd Management Area. The wild horses residing outside of the HMA are in areas not designated for their long-term use, or areas where they were not "presently found" at the passage of the WFRHBA, and cannot be managed consistent with other resource use allocations**.**

Land health evaluations indicate that current wild horse population levels (in combination with other herbivory) are exceeding the capacity of the resources within the HMA. It has been determined that the current level of vegetation utilization is excessive, and further increases in utilization cannot be sustained over the long term. In the absence of action now, to reduce the overall level of herbivory in the HMA, levels of utilization are certain to accelerate. A wide range of adverse effects, some of which are not readily reversible, would follow.

The Proposed Action (Alternative A) is the BLM's attempt to manage wild horses within the area designated for their long-term management and to balance wild horse populations with other resources including, wildlife habitat, ACECs, cultural resources, soil and vegetation resources. The BLM needs to implement the Proposed Action to reduce the impacts associated with an overpopulation of wild horses to ensure that rangeland and riparian resources are capable of meeting land health standards. This would ensure a thriving natural ecological balance and multiple use relationship on public lands in the area consistent with the provisions of Section 1333(a) of the WFRBHA.

1.3 DECISION TO BE MADE

Upon completion of this environmental assessment, the Authorized Officer will make a determination as to whether any "significant" impacts could result from the implementation of these actions. "Significance" is defined by NEPA and is found in regulation 40 CFR 1508.27. An EA provides evidence necessary to determine whether a significant impact exists. If the BLM determines that the proposal would result in a "significant" impact, then the BLM would prepare an Environmental Impact Statement (EIS) for the project. If the Authorized Officer determines that this project does not have "significant" impacts following the analysis, then the BLM will prepare and sign a "Finding of No Significant Impact" and Decision Record which implements the agency's selected alternative.

The objective of the action is to manage for a wild horse herd on 190,130 acres within the Piceance-East Douglas Herd Management Area so that a thriving ecological balance is maintained. The Authorized Officer will select the alternative that best allows the BLM to meet this objective as defined by the Colorado Standards of Rangeland Health.

1.4 LAND USE PLAN CONFORMANCE

All of the alternatives are subject to conformance with the following plan (43 CFR 1610.5-3(a), BLM 1617.3):

> Name of Plan: White River Record of Decision and Approved Resource Management Plan (WRRMP/ROD).
>
> Date Approved: July 1, 1997
>
> Decision Number/Page: Page 2-26, *Wild Horses*, Objective: "Manage for a wild horse herd … within the Piceance-East Douglas Herd Management Area (HMA) so that a thriving ecological balance is maintained for all plant and animal species on that range."
>
> Management: "Wild horses will be managed to provide a healthy, viable breeding population with a diverse age structure.
>
> The North Piceance and West Douglas Herd Areas will be managed in the short-term (0 – 10 years) to provide forage for a herd of 0 to 50 horses in each herd area. The long term objective (+10 years) will be to remove all wild horses from these areas.
>
> The boundary of the Piceance-East Douglas HMA will be expanded to include the Greasewood allotment (presently a part of the North Piceance Herd Area).
>
> The wild horse herd population will be managed to improve range condition.

Alternatives A and B would both be in conformance with the current WRRMP/ROD and other identified plans below. Alternatives C and D are necessary to analyze the range of alternatives and would require a plan amendment in order to fully implement.

This document is tiered to the White River Resource Area Resource Management Plan and Final Environmental Impact Statement (July 1997), pages 2-26 (http://www.blm.gov/co/st/en/fo/wrfo/index.html) and incorporates by reference the 1981 HMAP in its entirety (http://www.blm.gov/co/st/en/fo/wrfo/wrfo_wild_horses.html).

1.5 OTHER PLANS

2002 – The gather EA WR-02-049, page 32, states the following: In 1997, an Ecological Site Inventory was completed for the Greasewood allotment which was added to the Piceance part of the Herd Management Area as a result of the 1997 WRRMP/ROD. This inventory determined that there were 435 Animal Unit Months (AUM) available for allocation to wild horses within the Greasewood Allotment. This allocation would equate to a yearlong capacity for 29 wild horses. In addition, this document provided the overall distribution of wild horses and carrying capacities for each geographical region within the HMA. Detailed analysis of this data and conclusion is contained in EA CO-WRFO-00-91developed in conjunction with the grazing permit renewal for the Greasewood Allotment. The BLM increased the AML from 95 to 140 wild horses to 135 to 235 wild horses.

1997 – Through the WRRMP the boundary of the HMA was expanded to include the Greasewood Allotment to offset any possible loss of summer rangeland resources from other land uses within the Boxelder and Pasture C, of the Square S allotments.

1996 – In 1996, through the White River Resource Area (WRRA) Wild Horse Removal Plan EA #96-72 BLM allocated 450 AUMs to wild horses in Pasture C of the Square S Allotment for 30 wild horses and 1275 in the Yellow Creek Allotment for 85 wild horses.

1981 - Piceance-East Douglas Herd Management Area Plan (HMAP) – Reiterated the 1980 Management Framework Plan and 1981 Grazing Environmental Impact Statement decisions and again called for removal of all horses west of Douglas Creek and in allotments outside of the Herd Management Area.

1981 - Management Framework Plan – 1) Allocate 2,101 AUMs of forage for a range of 95-140 wild horses in the 148,153 acre Piceance-East Douglas Creek Herd Management Area, 2) removal all horses west of Douglas Creek, 3) remove horses from all other allotments within the Piceance Planning Unit, 4) complete boundary fencing of Yellow Creek and Cathedral Bluffs (allotments) to eliminate drift of wild horses into adjacent allotments.

1980 - Environmental Impact Statement on Grazing Management – Analyzed grazing issues prior to the 1981 Management Framework Plan decisions.

1975 - Management Framework Plan – 1) remove wild horses west of Douglas Creek, 2) retain wild horses east of Douglas Creek, 3) construct a fence along the Douglas Creek road from Rangely up East Douglas Creek.

Numerous EAs have been conducted in past years to analyze the impacts of various removal methods on wild horses and other elements of the human environment including analyses of the gather and removal of wild horses within the HMA in attempts to reach the established AML. All documents are available in the White River Field Office (WRFO) for public review.

1.6 RELATIONSHIP TO LAWS, REGULATIONS AND OTHER PLANS

Statutes and Regulations

The Wild Free-Roaming Horses and Burros Act of 1971, 16 U.S.C. 1333(a) provides:

Section 3(a)

> The Secretary shall manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands.

To achieve a thriving natural ecological balance (TNEB) on the public lands, wild horses and burros (WH&B) should be managed in a manner that assures significant progress is made toward

achieving the Land Health Standards for upland vegetation and riparian plant communities, watershed function, and habitat quality for animal populations, as well as other site-specific or landscape-level objectives, including those necessary to protect and manage threatened, endangered, and sensitive species. WH&B herd health is promoted by achieving and maintaining a TNEB.

However, Bureau of Land Management wild horse and burro program goals have expanded beyond simply establishing and maintaining a TNEB (i.e. establishing AML for individual herds), to include achieving/maintaining population size within the established AML as well as managing for healthy, self-sustaining wild horse population. The focus of wild horse management has also expanded to place emphasis on achieving rangeland health as measured through the Standards for Rangeland Health.

Section 3(b)(2)

> Where the Secretary determines on the basis of (i) the current inventory of lands within his jurisdiction; (ii) information contained in any land use planning completed pursuant to section 202 of the Federal Land Policy and Management Act of 1976; (iii) information contained in court ordered environmental impact statements as defined in section 2[3] of the Public Range Lands Improvement Act of 1978; and (iv) such additional information as becomes available to him from time to time, including that information developed in the research study mandated by this section, or in the absence of the information contained in (i-iv) above on the basis of all information currently available to him, that an overpopulation exists on a given area of the public lands and that action is necessary to remove excess animals, he shall immediately remove excess animals from the range so as to achieve appropriate management levels.

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that an action under consideration be in conformance with the applicable BLM land use plan, and be consistent with other federal, state, and local laws and policies to the maximum extent possible.

Title 43 Code of Regulations

Title 43 of the Code of Federal Regulations (CFR) provides:

PART 4700 – PROTECTION, MANAGEMENT, AND CONTROL OF WILD FREE-ROAMING HORSES AND BURROS

Subpart 4710 – Management Considerations

Sec. 4710.1: Land use planning.

> Management activities affecting wild horses and burros, including the establishment of herd management areas, shall be in accordance with approved land use plans prepared pursuant to part 1600 of this title.

Sec. 4710.4: Constraints on management.

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.

Subpart 4720 - Removal

Sec. 4720.1: Removal of excess animals from public lands.

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 in the following order.

(a) Old, sick, or lame animals shall be destroyed in accordance with subpart 4730 of this title;
(b) Additional excess animals for which an adoption demand by qualified individuals exists shall be humanely captured and made available for private maintenance in accordance with subpart 4750 of this title; and
(c) Remaining excess animals for which no adoption demand by qualified individuals exists shall be destroyed in accordance with subpart 4730 of this title.

Sec. 4720.2: Removal of strayed or excess animals from private lands.

Sec. 4720.2-1: Removal of strayed animals from private lands.

Upon written request from the private landowner to any representative of the Bureau of Land Management, the authorized officer shall remove stray wild horses and burros from private lands as soon as practicable. The private landowner may also submit the written request to a Federal marshal, who shall notify the authorized officer. The request shall indicate the numbers of wild horses or burros, the date(s) the animals were on the land, legal description of the private land, and any special conditions that should be considered in the gathering plan.

Sec. 4720.2-2: Removal of excess animals from private lands.

If the authorized officer determines that proper management requires the removal of wild horses and burros from areas that include private lands, the authorized officer shall obtain the written consent of the private owner before entering such lands. Flying aircraft over lands does not constitute entry.

<u>BLM Standards for Public Land Health in Colorado</u>

In January 1997, the Colorado BLM approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis. The BLM applies standards on a landscape scale and related to the potential of the landscape. These findings are located in specific elements listed in Chapter 4.

Readers can access this information at
http://www.blm.gov/co/st/en/BLM_Resources/racs/nwrac.html

The following table identifies elements of the human environment that are regulated by a statutory or regulatory authority, including those that the BLM determined would not be affected. Those elements that would potentially be affected are analyzed in Chapter 3 of this EA.

Table 1-1: Review of Statutory Authorities

ELEMENT/RESOURCE	Present	Affected	Comment
Air Quality	Yes	Yes	Any effects would be short term (temporary) and minimal. Analysis and Discussion in Chapter 3 below.
Area of Critical Environmental Concern (ACEC)	Yes	Potential	Analysis and Discussion in Chapter 3 below.
Cultural Resources	Yes	Potential	Analysis and Discussion in Chapter 3 below.
Environmental Justice	No	No	The Proposed Action would have no effect.
Farm Land-Prime/Unique	Yes	No	The Proposed Action would have no effect.
Floodplains	No	No	The Proposed Action would have no effect.
Human Health & Safety	Yes	Yes	Analysis and Discussion in Chapter 3 below. A risk management worksheet would be prepared to mitigate any hazards that may present themselves.
Migratory Birds	Yes	Yes	Analysis and Discussion in Chapter 3 below.
Native American Religious Concerns	Yes	No	Analysis and Discussion in Chapter 3 below.
Non-Native Invasive & Noxious Species	Yes	Potential	Analysis and Discussion in Chapter 3 below.
Threatened/Endangered Species	Yes	Yes	Analysis and Discussion in Chapter 3 below.
Water Quality (Surface/Ground)	Yes	Yes	Analysis and Discussion in Chapter 3 below.
Wastes, Hazardous/Solid	Yes	Potential	Analysis and Discussion in Chapter 3 below.
Fisheries and Riparian Zones	Yes	Yes	Analysis and Discussion in Chapter 3 below.
Wild & Scenic Rivers	No	No	None present.
Wilderness	No	No	None Present.
Wildlife	Yes	Yes	Analysis and Discussion in Chapter 3 below.

1.7 SCOPING AND IDENTIFICATION OF ISSUES

On February 2, 2011, the BLM sent out a scoping letter to interested publics requesting comments about the BLM's proposal to remove excess wild horses within and outside the HMA. Comments were requested to be submitted by March 4, 2011. A press release was issued on February 7, 2011 announcing the public hearing on helicopter and motorized vehicle use in conjunction with the public scoping meeting which was set for the March 1, 2011 beginning at 5:30 p.m. at the BLM, White River Field Office (WRFO) located at 220 East Market Street, Meeker, Colorado. This document, DOI-BLM-CO-110-2011-0058EA, was posted to the WRFO NEPA web log on February 16, 2011, to notify interested publics of the BLM's intent to develop this EA.

Pursuant to 43 CFR §4740.2(b), the BLM conducted a public hearing to address the use of motorized vehicles and helicopters in gathering excess animals for March 1, 2011, beginning at 5:30 p.m. at the WRFO located at 220 East Market Street, Meeker, Colorado. The WRFO issued notice of this hearing through a press release on February 7, 2011 and posted in the local newspaper, and on the WRFO website at http://www.blm.gov/co/st/en/fo/wrfo.html.

Fifteen (15) individuals attended the public hearing and scoping meeting, including members of the public, agency representatives, and one Senator's aid. The BLM received 33 comments plus an additional 7 comments were received after the close of business on March 4, 2011. The WRFO considered all of the comments received and addressed those within the scope of the analysis throughout the document. Below is a synopsis of those scoping comments that were received:

Table 1-2: Public Scoping Comments

Issues/Comments	Responses
If helicopter used, would prefer on the range humane euthanasia of the foals to reduce the suffering foals experience during gather process.	This comment presumes a degree of suffering by foals that are not anticipated based on previous gather operations (Section 3.4.5) and anticipated impacts of gather operations analyzed in Section 4.4.5.
Utilize helicopter for large numbers and open land for limited number of days within each gather. Utilize bait and trap in rough country. Do not limit the gather to a specific number of days or time period. Circumstances change so leave flexibility in timeframe. Allow for gathering wild horses inside the HMA and all surrounding areas where horses can be found rather than limiting the gather in the HMA one week and out of it the next.	Impacts and issues surrounding the use of helicopters in relation to gather operations are analyzed in Chapter 4 of this document. The length and availability of the National Gather Contractor dictates the length of time the BLM has to complete a gather operation. The use of bait trapping and water trapping was considered but was not carried forward as part of this analysis as provided below on page 19.
Request the number of wild horses in the HMA be reduced to the minimum 125 horses with a maximum 225 AML.	This comment is addressed within this document.
In areas where there are existing corrals or waters that could be enclosed and bait or water trapping should be considered, including those facilities located on private lands. The hay trapping would be most effective during the winter months when the ground is snow covered. Several trapping methods should be included in the EA so the BLM can accomplish their goal.	This issue is addressed within this document.
All available motorized and technical innovations as well as	This issue is addressed within this

traditional roping and trapping methods will be used to accomplish the population management objectives.	document.
Use landowners and permittees as contractors for water and hay trapping.	This issue is addressed within this document.
Long term plan needs to be mentioned with 40 – 60 years of planning using volunteers, technology and common sense to manage herds within humane process. Part of the management direction of the EA needs to incorporate educational programs to share the knowledge of natural balance.	This comment is outside of the scope of the current document.
BLM should sell a license so who ever wanted to catch a horse could.	This comment is outside of the scope of the current document.
Fertility control vaccines should only be used if horses will be gathered by bait and trap in the winter months on an annual basis to ensure effectiveness. Only use fertility control if it is part of the long term funded EA and can be administered at an effective cost.	This issue is addressed within this document. This EA makes no commitment to long term use of fertility control.
Sex ratio should be adjusted to 70% studs and 30% mares if there is no other fertility control measure utilized.	BLM has addressed this comment in alternatives considered but not carried forward for detailed analysis.
Increase the Appropriate Management Levels (AML's) for wild horses. Allocate the majority of forage in Piceance-East Douglas for wild horses.	This document serves as a review of the current AML range to determine its appropriateness based upon current impacts from multiple uses within the HMA.
Keep a genetically viable herd which needs to consist of at least 120 breeding aged animals which cannot include the foal population or horses two years of age or under, or mares no long reproductively active.	This issue is addressed within this document.
Consider the advantages of mountain lions in managing the wild horse population. Work with the Colorado Division of Wildlife to protect mountain lions in this herd area. Increasing the presence of mountain lions and other predators would be a natural and logical solution to keep wild horse populations managed, as mountain lions are a natural predator of wild horses.	This issue is addressed within this document. The Affected Environment of Wild Horses, Section 3.4.5, addresses the Natural Population Controls that occur within the HMA.
The possibility of pushing the animals back to their 'assigned' acreage or relocation to other public and/or private lands thus creating smaller herds that can be more easily managed and preserved.	This comment is outside of the scope of the current document.

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION & ALTERNATIVE FORMULATION

This chapter describes the Proposed Action and alternatives, including any that were considered but eliminated from detailed analysis. The BLM has developed four alternatives which will be considered in detail:

Alternative A – Proposed Action - Gather All Wild Horses, Selective Removal of Excess Wild Horses to Low End of AML, Administer Fertility Control, and Adjustment of Sex Ratio (60% Studs/40% Mares).

Alternative B – Gather and Removal of Excess Wild Horses to Low End of AML.

Alternative C – Allow the Wild Horse Population to Increase, while Reducing Livestock Grazing within the HMA - Gather only Excess Wild Horses which are Located Outside of the HMA.

Alternative D – No Action - Defer Gather and Removal of Excess Wild Horses Short Term and Long Term.

The terms listed below have been defined to clarify the language of the alternatives:

Gather: the action of capturing wild horses into a trap or holding corral, and collecting appropriate information on them, such as the location collected, sex, age, condition, etc.

Removal: the action of permanently removing wild horses from the HMA or outside the HMA after they are gathered, and preparing them for adoption or long-term pasture.

2.2 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

- **Gathers between the dates of March 1 through June 15:** This alternative was not carried forward since the time period corresponds with peak foaling periods, resulting in the increased separation of foals from their mare during herding operations, increased stress on mares resulting in increased abortion rates, mares abandoning foals and increased orphan foals. The BLM Handbook, H-4700-1, Section 4.4.4 prohibits the capture of wild horses by helicopter during peak foaling periods.

- **Exclusive Use of Hay and/or Water Trapping (Bait Trapping):** An alternative considered but not carried forward for detailed analysis was the use of bait and/or water trapping (without the use of helicopter) as the exclusive gather method. This alternative was dismissed from detailed analysis for the following reasons: (1) the size of the area is too large to the use this method exclusively; (2) the present water sources on both private and public lands inside and outside the HMA boundary would make it difficult to restrict wild horse access to selected water trap sites; (3) hay trapping would only be effective in severe winter conditions that are incompatible with human safety and logistical requirements if employed at a scale large enough to affect the population of the HMA, due to the WRFO's management of the HMA the necessity warranting a gather due to lack of forage, including severe winter conditions, has not been experienced; and (4) the aforementioned logistic difficulties, length of time, and increased cost of this alternative would make it ineffective in meeting the purpose and need. Given the impracticalities of implementation, this alternative was eliminated from detailed analysis.

- **Gather to the High End of AML:** This alternative was not analyzed in detail since reducing the population to the high end of AML would not be consistent with the current purpose and need. Under this alternative the gather would mirror the gather operations of the Alternative B; however, the BLM would only remove 147 excess wild horses within the HMA only. Under this alternative, the following year after a gather and removal operation the wild horse population, at a 20% growth rate, would be back up to 282 by 2012, which would result in an excess population and not able to maintain a thriving, natural, ecological balance with other resources, and would require additional gather operations to comply with the Wild Horse and Burro Act of 1971 and the WRRMP. For these reasons, this alternative was eliminated from further consideration.

- **Other alternative capture techniques instead of helicopter assisted techniques:** This alternative would be used as capture methods other than helicopters to gather excess wild horses, which were suggested through previous public reviews. As no specific alternative methods were suggested, the BLM identified chemical immobilization, net gunning, and wrangler/horseback drive trapping as other capture techniques for gathering wild horses. Net gunning techniques normally used to capture big game also rely on helicopters. Chemical immobilization is a very specialized technique and strictly regulated. Currently, the BLM does not have sufficient expertise to implement this method and it would be impractical to use given the size of the HMA, access limitations and the approachability of the wild horses. Use of wrangler on horseback drive-trapping to remove excess wild horses can be fairly effective on a small scale but due to number of excess wild horses to be removed, the large geographic size of the HMA and approachability of the wild horses this technique would be ineffective and impractical to meet the purpose and need. Horseback drive-trapping is also very labor intensive and can be very harmful to the domestic horses and wranglers during the gather operations. For these reasons, this alternative was eliminated from further consideration.

- **Gather to Low end of AML and adjust sex ratio to 80% Males and 20% Females:** WRFO completed a WinEquus model for this alternative. The WinEquus model indicated that this alternative would not extend the timeframe between gathers significantly above the 60/40 sex ratio adjustment that is being considered under Alternative B.

If any of the above identified alternatives are considered in future gather operations separate analysis will be done at that time.

2.3 ALTERNATIVES ANALYZED IN DETAIL

ALTERNATIVE A – PROPOSED ACTION - Gather All Wild Horses, Selective Removal of Excess Wild Horses to Low End of AML, Administer Fertility Control, and Adjustment of Sex Ratio (60% Studs/40% Mares).

Under the Proposed Action the BLM would gather the current estimated population of 382 wild horses inside and 78 wild horses from outside of the HMA. If the Proposed Action is fully

successful, the HMA will consist of approximately 135 wild horses; the lower range of the appropriate management level of 135 to 235 wild horses. The BLM would select 135 wild horses to maintain a diverse age structure, herd character, and body type (conformation). Of the wild horses returned to the HMA, 10 percent would be yearlings (13 wild horses – 7 studs and 6 mares). Of the remaining 122 wild horses 60 percent (72 animals) would be studs and 40 percent (50 animals) mares. All mares released to the HMA over 2 years of age would be treated with Porcine Zona Pellucida (PZP) immunocontraception (fertility) drugs.

Assumptions

In order to begin implementation of the fertility control and sex ratio adjustment the BLM would have to gather a minimum of 247 wild horses from within the HMA. Therefore, the exact number of mares (treated) and the exact number of stallions to be released back into the HMA depends on the total number of wild horses gathered from inside the HMA. In order to effectively implement the use of fertility control, and to adjust sex ratios to favor males, the BLM anticipates that it would need to gather more than 80% of the inventoried population (i.e. 306 wild horses out of the 382), otherwise an insufficient number of wild horse mares would be gathered to effectively implement fertility control (28 mares). If the gather resulted in 55% efficiency (i.e. 50% of the current population of 382 inside or 191 wild horses gathered) potentially none of the gathered wild horses would be returned to the HMA.

ALTERNATIVE B - Gather and Removal of Excess Wild Horses to Low End of AML.

Under this alternative no more than 247 wild horses would be gathered and removed from within the HMA and all wild horses would be gathered and removed from outside the HMA. There would be no fertility control applied, no sex ratio adjustment for stallions/mares, and no selective removal of excess wild horses.

Assumptions

The BLM anticipates that gathering 100% of the wild horses, both inside and outside of the HMA, may not be attainable, due to terrain, cover, budget, time and potential for storm conditions, and historical gather success rates.

Without the use of fertility control and sex ratio adjustment, there would be no influence to the population growth rate.

ALTERNATIVE C - Allow the Wild Horse Population to Increase, while Reducing Livestock Grazing within the HMA - Gather only Excess Wild Horses which are Located Outside of the HMA.

Under this alternative all wild horses (approximately 78) outside the HMA would be gathered and removed. No wild horses would be gathered and removed from inside the HMA, requiring a reallocation of forage from livestock to wild horses as their population increases.

Assumptions

Forage allocation to livestock (6,935 AUMs) and wild horses (2,568 AUMs) currently accounts for 9,503 AUMs within the HMA. Wild horse populations will have a recruitment rate of approximately 20% annually. BLM would continue with utilization monitoring. When the allocated forage level of 9,503 AUMs is reached BLM would analyze the need for a gather to remove excess wild horses from the HMA (wild horse numbers would not be allowed to go above the allocated forage level of 9,503). Under this alternative BLM would be required to establish the proper carrying capacity and AML within the HMA for wild horse grazing to maintain TNEB. It is expected that some areas will receive heavy continuous season long grazing, especially those areas close to water and easily accessible.

ALTERNATIVE D - Defer Gather and Removal of Excess Wild Horses Short Term and Long Term.

Under this alternative, the BLM would not conduct a gather during 2011 to remove excess wild horses from within and outside the HMA. Only wild horses located on private lands and at the request of the land owner would be gathered and removed in accordance with 43 CFR 4720.2-1.

Assumptions

The BLM anticipates conducting gather operations every four years to eight years out (refer to Table 2-1 for projected wild horse populations in 2015 and 2019). Wild horse populations will increase at approximately 20% annually.

Table 2-1. Summary Comparison of the Alternatives

Within HMA only - Item	Proposed Action Alternative A Lower AML, Fertility Control and Sex Ratio Adjustment	Alternative B Lower AML,	Alternative C Allow the Wild Horse Population to Increase, while Reducing Livestock Grazing within the HMA - Gather only Wild Horses which are Located Outside of the HMA		Alternative D No Action Defer Gather and Removal	
Gather Year	2011	2011	2011	2016*	2015	2019
Population/Gather Number	382/382	382/247	382/0**	959/ 167	799/664	1,657/ 1,522
Removal Number HMA/Outside	247/78	247/78	0/78	167/0	664	1,522
Fertility Control - # Mares	39-49	0	0	0	0	0
Post-Gather Sex Ratio	81/54	Natural	Natural	Natural	Natural	Natural
Post-Gather Population Size	135	135	N/A	792	135	135

***** 2016 Wild horse populations exceed the total allocated forage within the HMA.
*** ***No gather would be completed within the HMA, however, this alternative does not preclude future gathers once horse populations begin to affect the Thriving Ecological Balance within the HMA.

2.4 MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES

- Methods involving the National Gather Contractor (contracted helicopter and gather crew) are tentatively scheduled for September 20 – 30, 2011, and would last approximately 10 days. Several factors such as animal condition, herd health, weather conditions, or other considerations could result in adjustments in the schedule. The 2011 gather dates do not apply to Alternative D.

- The BLM will provide the public with the opportunity to observe the HMA gather operations and wild horses in temporary holding at the BLM facilities, in accordance with WO-IM- 2011-040 and Washington Office Memorandum, Guidance regarding distance of helicopter operations from persons dated June 2, 2011 (Appendix F), as they occur. A schedule will be prepared and posted at (http://www.blm.gov/co/st/en/fo/wrfo.html.) that would outline specific viewing opportunities and other relevant information.

- The BLM would publish any subsequent gather operations, including NEPA analysis and other information in the local newspapers as well as on the WRFO's website as above.

- The WRFO would complete the project through a BLM Wild Horse and Burro (WH&B) National Program Contractor and/or BLM personnel.

- The BLM would not construct trap locations or temporary holding facilities within 200 meters of known occupied threatened or endangered plant species habitat.

- The BLM would conduct gather operations in accordance with the Standard Operating Procedures (SOPs) described in the National Wild Horse and Burro Gather Contract (Appendix A). The primary gather method would be the helicopter drive trapping method with occasional helicopter assisted roping (from horseback).

- Trap sites and temporary holding facilities would be located in previously used sites or other disturbed areas whenever possible (Map 2-1). BLM will inventory all undisturbed areas identified as potential trap sites or holding facilities for cultural resources prior to disturbance, if they have not been previously surveyed. Locations encountering cultural resources would not be utilized unless they could be modified to avoid impacts to cultural resources.

- A veterinarian from the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) or licensed contract veterinarian will be at the gather and consulted, as needed, to examine animals and make recommendations to the BLM for care and treatment of the gathered wild horses. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Washington Office Instruction Memorandum 2009-041). Policy reference: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-041.html

http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2010/IM_2009-041_ch1.html

- Data including sex and age distribution, condition class information using the Henneke rating system, color, size and other information may also be recorded, along with the disposition of that animal either removed or released.

- If the BLM gathers a statistically viable sample of wild horses (i.e. 25 returned wild horses), then the BLM would collect genetic samples. This information will be used to continue to monitor the genetic diversity/health of the Piceance-East Douglas herd. The preferred sample method is to collect hair follicle samples from those wild horses selected for sampling. Hair samples are collected from the tail head of the selected wild horse and placed in a bag. The bag is labeled with the color, sex, age, and location from where the wild horse was gathered. The samples are sent as soon as possible to Dr. Cothran's for testing with a report of the result received back to BLM as soon as Dr. Cothran's/Texas A& M University complete testing. Such reports are now included on the WRFO's webpage (http://www.blm.gov/co/st/en/fo/wrfo/piceance_-_east_douglas.html).

- Depending upon available funding, the WRFO would complete an aerial inventory of the HMA when snow conditions are adequate during the winter of 2012.

- Wild horses gathered from outside of the HMA would be removed; unless during the selective removal process it is determined that specific wild horse(s) could be returned to the HMA. The BLM would base its determination on the biological characteristics, physical appearance, body type, age, and the risks associated with the selected animal(s) potential to again relocate outside of the HMA.

- The contractor would utilize goose-neck trailers to truck gathered wild horses to either the Yellow Creek Corral holding facility or a contractor temporary holding facility where they would receive appropriate food and water. Holding facilities and gather site have historically been located on public and private lands due to road access and availability of water and may be located on such lands again during this proposed gather.

- At the temporary holding corral, wild horses are paint-marked to identify the location from which they were gathered, aged, sorted (i.e. stud pens, dry mare pens, mare/foal pens, and return pens) into different pens. The wild horses would be fed good quality hay and water in accordance with gather SOP (Appendix 1). Wild horses that the BLM identify for relocation would be released to the geographical regions where they were caught as soon as possible following gather operations. The BLM and contractor would handle wild horses only to the extent necessary.

- Well-constructed traps, safety-conscious corral construction at the holding facility, well-maintained equipment, and additional pens for wild horses determined best kept separate from other wild horses will decrease stress, and the potential for injury and illness. Experienced BLM personnel will be on-site during all phases of the operation.

- Removed wild horses would be transported to the Canon City, Colorado BLM holding facility where they would be prepared (freeze-marked, vaccinated and de-wormed) for adoption, sale (with limitations) or long-term holding.

- There is no proposal to hold a wild horse adoption at the Yellow Creek Corrals upon completion of the gather because of the current market conditions. However, if determined that an adoption is warranted the BLM may hold an adoption offering approximately 12 wild horses with that date to be decided upon and advertised.

- The BLM would monitor noxious weeds at gather sites and temporary holding facilities the spring and summer of 2012.

- Weed free hay would be utilized on all public lands for holding of wild horses.

- The BLM will carry out all phases of the gather, holding, adoption preparation and transport according to Bureau policy with the intent of conducting a safe, humane operation. If conditions warrant, or if animal health and welfare is in jeopardy at any time, gather operations would be delayed, or halted pending resolution of site specific issues.

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

  Animals would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s). From there, they would be made available for adoption or sale to qualified individuals or to long-term holding (grassland) pastures.

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

  Upon arrival at the short term holding facility, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are fed good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club feet, and other severe congenital abnormalities) would be humanely euthanized by a veterinarian using methods acceptable to the American Veterinary Medical Association (AVMA). Wild horses in very thin condition or animals with injuries are sorted and placed in hospital pens, fed separately and/or treated for their injuries as indicated. Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. Some of these

animals are in such poor condition that it is unlikely they would have survived if left on the range. Similarly, some mares may lose their pregnancies. Every effort is taken to help the mare make a quiet, low stress transition to captivity and domestic feed to minimize the risk of miscarriage or death.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption or sale. Preparation involves freeze-marking the animals with a unique identification number, drawing a blood sample to test for equine infections anemia, vaccination against common diseases, castration, and de-worming. During the preparation process, potential impacts to wild horses are similar to those that can occur during handling and transportation. Serious injuries and deaths from injuries during the preparation process are rare, but can occur.

At short-term corral facilities, a minimum of 400 square feet is provided per animal. Mortality at short-term holding facilities averages approximately 5% per year (GAO-09-77, Page 51), and includes animals euthanized due to a pre-existing condition; animals in extremely poor condition; animals that are injured and would not recover; animals which are unable to transition to feed; and animals which are seriously injured or accidentally die during sorting, handling, or preparation.

- Adoption or Sale with Limitations, and Long Term Holding

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses over 18 months of age. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for one year and the horse and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse, at which point the horse becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR 4750.

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

Between 2007 and 2009, nearly 62% of excess wild horses or burros were adopted and about 8% were sold with limitation (to good homes) to qualified individuals. Animals 5 years of age and older are transported to long-term holding (LTH) grassland pastures. The BLM has maintained LTH pastures in the Midwest for over 20 years.

Potential impacts to wild horses from transport to adoption, sale or LTH are similar to those previously described. One difference is that when shipping wild horses for adoption, sale or LTH, animals may be transported for a maximum of 24 hours. Immediately prior to transportation, and after every 18-24 hours of transportation, animals are offloaded and

provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 25 pounds of good quality hay per horse with adequate bunk space to allow all animals to eat at one time. Most animals are not shipped more than 18 hours before they are rested. The rest period may be waived in situations where the travel time exceeds the 24-hour limit by just a few hours and the stress of offloading and reloading is likely to be greater than the stress involved in the additional period of uninterrupted travel.

LTH pastures are designed to provide excess wild horses with humane, life-long care in a natural setting off the public rangelands. There wild horses are maintained in grassland pastures large enough to allow free-roaming behavior and with the forage, water, and shelter necessary to sustain them in good condition. About 22,700 wild horses, that are in excess of the existing adoption or sale demand (because of age or other factors), are currently located on private land pastures in Iowa, Kansas, Oklahoma, and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTH pastures are highly productive grasslands as compared to more arid western rangelands. These pastures comprise about 256,000 acres (an average of about 8-10 acres per animal). The majority of these animals are older in age.

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

CHAPTER 3 - AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter characterizes the resources that may be affected by the Proposed Action and the alternatives including the No Action alternative.

3.2 GENERAL SETTING

The analysis area is located within the Uinta Basin physiographic region, which is a section of the Colorado Plateau, which in turn is part of the Intermontane Plateaus physiographic division. The analysis

area is characterized by valley bottoms and plateaus in the lower elevations and long ridgelines that generally drop into narrow valley bottoms towards the higher elevations until the basin drops off the Cathedral Bluffs into the East Douglas drainage portion. This portion of the analysis area, is in places, steep with a few nearly vertical sections but also includes small plateaus scattered throughout. Elevations within the analysis area range from approximately 5,750 to 8,600 feet. Map 1-1 represents the analysis area.

The area is utilized by wild horses, domestic livestock and numerous wildlife species, such as migratory birds and big game along with other small mammals. The area is bordered to the west by Colorado State Highway 139, Rio Blanco County Roads 27 and 28 on the south, Rio Blanco County Roads 20, 91, and 68 to the east and Colorado State Highway 64 to the north.

The HMA is characterized by a constructed fence along the entire boundary with the exception of approximately 2.5 miles of fence near Rio Blanco County Road 28 in the Cathedral Creek area where there is also no natural boundary and approximately 5 miles where the fence is located on the north side of Colorado State Highway 64. There are segments of fence line throughout the HMA that are in unmaintained condition and results in wild horses being able to get onto lands outside the HMA into areas with no previous history of wild horses and are the areas where horses have relocated.

The HMA is generally dry with several perennial water sources along with seeps and springs throughout the area with the rights associated with those waters belonging to both private and public entities. However, in the Greasewood portion of the HMA, two main perennial, high flow, water sources are located on private land and those rights belong to the private land owner with an agreement currently existing between that owner and the BLM to allow for wild horse use of those waters. The agreement is contingent on the fact that BLM will manage the wild horses as identified by an AML for the area.

3.3 CLIMATE

The climate is typical of semi-arid ecosystems, with occasionally severe cold winter temperatures. Precipitation normally ranges from approximately 8 to12 inches annually on the lower elevations and 12 to 22 inches annually on the higher elevations. Most of this precipitation comes during the winter months in the form of snow primarily in the winter and spring with the summers experiencing both gentle rain and/or intense rain storms. Temperatures range from greater than 90 degrees Fahrenheit in the summer months to minus 40 degrees Fahrenheit or colder in the winter months.

Table 3-1 below shows precipitation from the Pinto Mesa Remote Access Weather Station (RAWS), and data taken from the Weather Station in Rangely, Colorado.

Table 3-1: RAWS Precipitation Data

Year	Pinto Mesa RAWS	Rangely Weather Station
2000	8.12	8.49
2001	5.14	9.92
2002	5.19	5.67
2003	6.29	6.51
2004	7.06	8.75

2005	11.76	12.21
2006	8.3	6.86
2007	8.98	12.12
2008	6.51	7.33
2009	6.6	9.02
2010	8.39	11.05
Average	7.49	8.90

As shown in the Table 3-1 above, precipitation in 2010 was nearly an inch above the 11 year average at Pinto Mesa, and over 2 inches above the 11 year average at Rangely.

Correlation of precipitation and trend with wild horse use: The Society for Range Management defines drought as "prolonged dry weather, generally, when precipitation is less than three-quarters of the average annual amount." The conventional wisdom is that it would take several years of precipitation above the mean to "break" a period of drought. The period of 1995- 2005 is characterized as a drought period and this period is likely just part of a long term warmer drier period in terms of geologic time, an altithermal.

3.4 AFFECTED RESOURCES AND LAND USES

3.4.1 SOIL, WATER AND AIR

Soil Resources

The soils in the analysis area have been mapped by the Natural Resources Conservation Service (NRCS) in an Order III soil survey for Rio Blanco County. Complete detailed maps and mapping unit descriptions are found in the published survey (NRCS 1982) and are on file at the White River Field Office. Listed below, are major soil mapping units which occur within the analysis area.

Table 3-2: Soil Types and Acres within the Analysis Area.

Soil Type #	Soil Name	Ecological Site	Annual Precipitation (inches)	Slope Range %	Acres
1	Abor Clay Loam	Clayey Foothills	14-16	5-30	6,764
5	Badland	none	8-18	N/A	307
6	Barcus channery loamy sand	Foothills Swale	14-16	2-8	2,521
7	Billings silty clay loam	Alkaline Slopes	6-8	0-5	814
9	Blakabin-Rhone-Waybe complex	Brushy Loam/Brushy Loam/Dry Exposure	18-22	5-50	2022
10	Blazon moist-Rentsac Complex	Pinyon-Juniper woodland	15-17	complex	11,325
11	Borolic	Stoney Foothills/	15-18	6-50	1085

	Caciorthids-Guben complex	Rolling Loam			
13	Bulkley channery silty clay loam	Pinyon-Juniper woodlands	15-18	5-30	6,272
15	Castner channery loam	Pinyon-Juniper woodland	15-18	5-50	21,480
21	Cliffdown-Cliffdown Variant complex	Saltdesert Breaks	7-9	5-65	1,858
22	Clifterson channery loam	Loamy Saltdesert	7-9	1-15	155
25	Colorow sandy loam	Sandy Saltdesert	8-10	5-30	462
31	Dollard silty clay loam	Clayey Foothills	1-16	15-40	691
33	Forelle loam	Rolling Loam	15-18	3-8	1,286
34	Forelle loam	Rolling Loam	15-18	8-15	119
35	Gaynor-Midway silty clay loam	Silty Saltdesert	10-13	2-25	853
36	Glendive fine sandy loam	Foothills Swale	14-17	N/A	18,086
37	Glenton sandy loam	Alkaline Slopes	8-10	1-6	189
38	Guben loam	Rolling Loam	15-18	0-3	60
40	Hagga loam	Swale Meadow	15-16	N/A	119
41	Havre loam	Foothill Swale	14-17	0-4	4,228
42	Irigul channery loam	Loamy Slopes	18-22	5-50	9,649
43	Irigul-Parachute complex	Loamy Slopes/Mountain Loam	18-22	5-30	6,852
46	Kinnear fine sandy loam	Loamy Saltdesert	8-11	1-5	641
47	Kobar silty clay loam	Deep Clay Loam	15-18	0-3	53
48	Kobar silty clay loam	Deep Clay Loam	15-18	3-8	1,163
49	Kobar silty clay loam	Deep Clay Loam	15-18	8-15	425
53	Moyerson stony clay loam	Clayey Slopes	13-16	15-65	10,152
55	Nihill channery sandy loam	Saltdesert Breaks	10-12	5-50	979
56	Northwater loam	Aspen Woodlands	19-21	5-50	1,548
58	Parachute Loam	Brushy Loam	18-22	25-75	5,069
59	Parachute-Rhone loams	Mountain Loam	18-22	5-30	4,473
61	Patent loam	Rolling Loam	15-17	3-8	447
62	Patent loam	Rolling Loam	15-17	8-15	471
64	Piceance fine sandy loam	Rolling Loam	15-18	5-15	5,667
66	Potts-Begay fine sandy loams	Loamy Saltdesert/Sandy Saltdesert	9-12	2-7	520

67	Rabbitex flaggy loam	Pinyon-Juniper woodland	10-65	10-65	407
69	Razorba channery sandy loam	Spruce-Fir woodland	18-22	30-75	1,990
70	Redcreek-Rentsac complex	PJ woodlands/PJ woodlands	14-18	5-30	13,443
73	Rentsac channery loam	Pinyon Juniper woodlands	14-18	5-50	120,553
74	Rentsac-Moyerson-Rock Outcrop	PJ Woodlands/Clayey Slopes	13-16	N/A	60,854
75	Rentsac-Piceance complex	PJ woodland/Rolling Loam	14-18	2-30	12,264
76	Rhone loam	Brushy Loam	18-22	30-75	3,190
78	Rock Outcrop	None	8-20	N/A	5,064
80	Shawa loam	Deep Loam	15-18	3-8	79
82	Silas loam	Mountain Swale	16-20	0-8	520
83	Silas loam	Mountain Swale	16-20	8-12	19
87	Starman-Vandamore complex	Dry Exposure/Dry Exposure	18-22	5-40	4,365
89	Tisworth fine sandy loam	Alkaline Slopes	13-15	0-5	1,728
90	Torrifluvents, gullied	None	8-16	N/A	1,733
91	Torriorthents-Rock Outcrop	Stoney Foothills	8-18	15-90	55,998
92	Trembles loam, wet	Salt Meadow	14-16	N/A	53
93	Turley fine sandy loam	Alkaline Slopes	8-12	0-3	428
94	Turley fine sandy-loam	Alkaline Slopes	8-12	3-8	395
95	Uffens loam	Alkaline Slopes	7-10	0-5	978
96	Veatch channery loam	Loamy Slopes	16-20	12-50	5,665
102	Work Loam	Deep Loam	15-18	8-15	36
104	Yamac Loam	Rolling Loam	13-16	2-15	7,766

Fragile soils make up 280 acres within the analysis area and were classified in the WRRMP/ROD as areas with slopes greater than 35 percent with sand, loamy sand, very fine sandy loam, fine sandy loam, silty clay, or clay texture, a depth to bedrock of less than 20 inches, an erosion condition that is rated as poor, **or** a K (erosion potential) factor of greater than 0.32. There are 2,463 acres of saline soils (Electrical Conductivity (EC) >16 µmhos). In addition, a substantial acreage of soils are less than 16 µmhos but may exhibit saline characteristics according to the detailed soils descriptions. Saline soils generally support a sparse vegetation cover of short, salt tolerant desert shrubs, grasses, and cryptogamic lichens. These soils generally formed in alluvium, colluvium, residuum, and reworked eolian deposits derived dominantly from shale and

sandstone. Because they lack sufficient moisture, these soils are dry, causing salts to precipitate at the surface as soil moisture evaporates. Runoff from saline soils can transport salt in solution and sediment which contains undissolved salts that can go rapidly into solution when the sediment reaches a major waterway.

Water Resources (Surface and Ground)

The analysis area is primarily within the headwaters of East Douglas Creek and the Yellow Creek drainage which are both partially perennial tributaries to the White River. The White River is a tributary to the Green River which is a tributary to the Colorado River. Spring discharge from these semi-arid lands generally occurs from mid March through early May due to snow melt and rainstorms. Base-flow to these streams originates principally from springs and other ground water inputs. Depending on the water quality of springs that feed surface waters the salinity of surface waters can change dramatically. For example, field work on Yellow Creek in the summer of 2010 measured specific conductivities of 2,800 to over 4,000 µS/cm from Barcus Creek to the confluence with Greasewood Creek. The unit µS/cm is microsiemens per centimeter and is the ability of a liquid to conduct electricity and is directly related to the amount of dissolved solids in water. Runoff-producing rainfall in these areas generally occurs as localized storms in the late summer and early fall.

The following table (Table 3-3) shows the affected water quality stream segments, area impacted by the Proposed Action (in acres), as well as any special designations for each of the affected stream segments.

Table 3-3. Affected Water Quality Stream Segments within the HMA and gather areas.*

Stream Segment	Segment Description	Designated Beneficial Uses	Use Protected (Y/N)	303(d) listed?	M&E listed?	Impairment?
12	White River From Piceance Creek to Douglas Creek	Aquatic Life Warm 1, Existing Primary Contact Recreation, Water Supply, Agriculture	N	N/A	N/A	N/A
13a	Tributaries to the White River from Piceance Creek to Douglas Creek	Aquatic Life Warm 2, Not Primary Contact Recreation, Agriculture	Y	N/A	N/A	N/A
13b	Tributaries and the Mainstem of Yellow Creek from the Source to the confluence with Barcus Creek	Aquatic Life Warm 2, Not Primary Contact Recreation, Agriculture	N	N/A	N/A	N/A
13c	Mainstem of Yellow Creek from confluence with Barcus Creek to the White River	Aquatic Life Warm 2, Not Primary Contact Recreation, Agriculture	N	N/A	N/A	N/A
13d	Violett Springs Ponds	Aquatic Life Cold 2, Primary Contact Recreation, Agriculture	N	N/A	N/A	N/A

15	Tributaries and Mainstem Piceance Creek from Ryan Gulch to Dry Fork of Piceance Creek	Aquatic Life Warm 2, Primary Contact Recreation, Agriculture	N	N/A	N/A	N/A
16	Tributaries to Piceance Creek	Aquatic Life Warm 2, Primary Contact Recreation, Agriculture	N	N/A	N/A	N/A
20	Mainstem of Black Sulphur Creek	Aquatic Life Cold 1, Not Primary Contact Recreation, Agriculture	N	N/A	N/A	N/A
22	Tributaries of the White River from Douglas Creek to the Colorado Utah Border	Aquatic Life Warm 2, Primary Contact Recreation, Agriculture	N	Douglas Creek	N/A	Sediment
23	Tributaries and Mainstem of East and West Douglas Creeks	Aquatic Life Cold 1, , Existing Primary Contact Recreation, Water Supply, Agriculture	N	N/A	East Douglas	N/A

***** Colorado Department Of Public Health And Environment, Water Quality Control Commission, Regulation No. 37 Classifications and Numeric Standards For Lower Colorado River Basin, Effective June 30, 2011

Colorado Department of Public Health and Environment (CDPHE) has not classified stream segments 12, 13b, 15, 16, 20, 22 and 23 as use protected. An intermediate level of water quality protection applies to waters that have not been designated outstanding waters or use-protected waters. For these waters, no degradation is allowed unless deemed appropriate following an antidegredation review by CDPHE. Stream segment13a has been designated as use protected. An antidegredation review by CDPHE is applicable to waters designated use-protected. For those waters, only the numerical protection specified in each reach apply.

The list of segments needing development of total maximum daily loads (TMDLs) includes one segment affected by the HMA or gather areas, segment 22, tributaries to the White River, Douglas Creek to the Colorado/Utah boarder, specifically Douglas Creek (sediment impairments). East Douglas Creek is on the Monitoring and Evaluation List for Iron.

The primary drainages affected by the Proposed Action are East Douglas Creek, Yellow Creek (tributary to White River) and Ryan Gulch (tributary to Piceance Creek). Overland runoff to these streams results mostly from snowmelt and rainstorms in spring and short-duration, high-intensity rainstorms in summer. Most streams within Piceance Creek and Yellow Creek basins are intermittent, meaning some reaches have no flow while other reaches may have perennial flows. East Douglas Creek has several tributaries that are spring fed and are perennial in their headwaters (Cathedral Creek and Soldier Creek). Base-flow to these streams originates principally from springs and other ground water inputs. Depending on the water quality of springs that feed surface waters, the salinity of surface waters can change dramatically. Field work on Yellow Creek in the summer of 2010 measured specific conductivities of 2,800 to over 4,000 µS/cm from Barcus Creek to the confluence with Greasewood Creek due to saline bedrock springs and groundwater contributing to the surface flow.

Surface discharge and periodic water quality records are available on Douglas Creek and Yellow Creek for the years 1973-1982 and 1988 to present in the Colorado Annual Water Resources reports (U.S. Geological Survey). Yellow Creek's annual mean water discharge for period of record is 2.28 cubic feet per second. To illustrate the magnitude of an intense rainstorm as compared to mean annual flows, the historical instantaneous peak flow on Yellow Creek occurred on September 7, 1978, where 6,800 cubic feet per second were measured using the slope area technique. The slope-area method is a technique commonly used by the USGS to determine peak discharges indirectly from surveyed cross-sections and high-water marks.

There have been 90 springs identified in the HMA (See Appendix E). Seventy-seven of the springs have had inventories and fifty-one have water rights filed on them. Map 3-1 provides all perennial springs that are located within the analysis area. The data collected from BLM inventories is listed below. The specific conductance (SC) of over 30 of these springs have values greater than 5,000 µS/cm indicating high levels of salinity (Appendix E). Levels this high make them less desirable as water sources and indicate groundwater inputs from saline zones.

In addition to these springs, there are also two water gaps located on Yellow Creek and many range improvements to provide water for wild horses, livestock and wildlife. A typical range improvement project for a spring usually includes fencing off the vegetation and the water source associated with the spring, installation of a spring box or infiltration chamber that collects water below the surface and feeds a pipeline that is run to a trough outside the fenced area. Troughs typically have an overflow designed to redirect water back to a location that would be similar to pre-disturbed conditions.

Air Quality

The analysis area is located in rural northwest Colorado in the White River Basin. Industrial facilities in the White River Basin include coal mines, soda ash mines, natural gas processing plants and power plants. Due to these industrial uses, increased population and oil and gas development in this region, emissions of air pollutants in the White River Basin due to exhaust emissions and dust (particulate matter) occur. Overall air quality conditions in the White River Basin are generally good due to effective atmospheric dispersion conditions and limited transport of air pollutants from outside the area. The White River Field Office (WRFO) resource area has been classified as either attainment or unclassified for all air pollutants, and most of the area has been designated for the prevention of significant deterioration (PSD) class II for Dinosaur National Monument. Regional air quality parameters including dust are being measured at monitoring sites located at Meeker, Rangely, Dinosaur and Ripple Creek Pass and near the Flat Tops Wilderness Area. Air quality modeling is being done to assure that regional air quality is not adversely impacted in the future by these activities.

3.4.2 VEGETATION RESOURCES

General Information

In general, the vegetation consists of big sagebrush-grass, montane shrub, winterfat, bitterbrush, pinyon-juniper, montane riparian, and intermountain salt desert shrub, communities with a few isolated pockets of mixed conifer and quaking aspen forests.

The foothills and mountain areas include big sagebrush-grass and low sagebrush-grass types. Primary shrubs are big sagebrush, low sagebrush and rabbitbrush. Major grass species include bluebunch and western wheatgrasses, Indian ricegrass, Sandberg bluegrass, needlegrass, and squirreltail. Forbs include milkvetch, arrowleaf balsamroot, lupine, phlox and aster. The higher mountain areas support mountain browse species that include serviceberry, snowberry, and antelope bitterbrush. Riparian areas at high elevations support wild rose.

The valleys are dominated by intermountain salt desert shrub and sagebrush communities which consist of winterfat, bitterbrush, shadscale, and rabbitbrush. Major grass species in the valleys include Indian ricegrass, needlegrasses and wheatgrasses. Forbs include lupine, milkvetch, phlox, and aster.

The vegetation community which occupies a given area depends on multiple factors, including the climate within an area, soil properties and slope, presence or absence of disturbance, and the level of disturbance. Individual plants compete for space, soil nutrients, water, and sunlight within an area. In order for vegetation to produce adequate food needed to complete its lifecycle and maintain reproduction, plants must have access to adequate sunlight, carbon dioxide, and nutrients including water in order to complete photosynthesis, to maintain growth and vigor. Because a diverse composition of vegetation species is needed in order to maintain healthy rangelands, and achieve rangeland health standards, there will always be competition between different vegetation species as well as intraspecific competition between individual plants within a site. In order for a species as well as individual plants to sustain within a population they must be able to adequately compete for necessary resources.

One factor which can influence a species ability to compete is disturbance. Following disturbances within a site or across a landscape, a species' ability to compete may be increased or decreased depending on the disturbance. Following a fire for example, grass species can initially gain an advantage due to the increased space and nutrients not used by shrubs, while shrubs may be at a disadvantage due to the reduction of mature plants which provide seed. Herbivory is another disturbance which can greatly affect vegetations ability to complete its life cycle. Season long grazing can reduce competitiveness of grass species, especially the most palatable species. Following repeated removal of photosynthetic material by herbivory, individual grass plants lose their ability to complete their growth cycle including reproduction especially during the spring growing season when plants are using food stored in the roots for growth, if they are unable to produce more food because the leaves are repeatedly removed by herbivory, the plant will likely die. Following this disturbance, other species such as shrubs, and less palatable grasses gain an advantage because they are not as susceptible to the disturbance, and can complete their life cycle without the added pressure of outside influences. Under

continuous season long grazing, the palatable grass species susceptible to grazing begin to be replaced by less palatable species which are also likely less valuable forage to grazing animals.

Areas used by grazing ungulates within the HMA can be categorized into three general periods of use; summer range, winter range, and spring/fall range. Summer range includes areas at higher elevation where environmental conditions such as snow levels, vegetation growth characteristics, and available water restrict the value and availability of those areas for grazing to summer months. Winter ranges are generally low elevation ranges which allow for grazing use during winter months when other areas are inaccessible to animals, grazing animals using these areas can rely on snow cover as a water source, within the HMA these areas are not solely used during winter months, however, the general lack of water sources in these areas limits the value and availability for grazing during other seasons. Spring/fall ranges are transitional ranges between summer and winter use areas, these areas largely overlap winter and summer ranges, under yearlong free roaming use by wild horses, these areas are intermingled with the winter and summer range. Under seasonal prescribed grazing by livestock these areas are designated as pastures, and livestock are rotated through the area while transitioning from winter to summer range to achieve growing season grazing deferment. Within the HMA, there is not an equal balance of winter and summer range, high elevation summer range includes the areas around Cathedral Bluffs, and Calamity Ridge, Map 3-1 is a colored digital elevation model showing the amount of high elevation and low elevation habitat within the HMA. Analysis of AML considers this imbalance in that the population of wild horses which can be managed in TNEB is limited by the amount of summer range within the HMA.

The state of plant composition within the vegetation community which occupies a site can vary, these different states may not be the desirable community, but can be very stable and difficult to change without human influence which is often time consuming and costly. The following State and Transition model (Figure 1) shows shifts in plant communities within a rolling loam ecological site following some form of disturbance, or lack of disturbance. This model was built using a State and Transition model developed by the USDA NRCS for a loamy 10”-14” Foothills and Basins West ecological site in Wyoming (NRCS ESD, 2008b) which is similar to the rolling loam ecological site in the HMA. The Model developed by the NRCS is broader, for use across a major land resource area. In this model, the desired plant community (DPC) of mixed grass and Wyoming big sagebrush provides essential forage and habitat for wild horses, wild life, and livestock. The mixed grass community is dominated by cool season bunchgrasses including, bluebunch wheatgrass, needlegrasses, and Indian ricegrass, as well as a subdominant component of the cool season rhizomatous grass, western wheatgrass. The dominant shrub species of this community is Wyoming big sagebrush. Within the HMA, there are approximately 10,806 acres within the rolling loam and PJ woodland/rolling loam ecological site. Although it is not know how many acres of rolling loam ecological site within the HMA are in each state of the model below, the intent of the model for this analysis is to show possible states and the corresponding vegetation community within an important ecological site within the HMA. In this model, the desired plant community is the most beneficial and valuable state for grazing animals, the sagebrush/bunchgrass site provides valuable habitat for some wildlife species notably sage grouse. It is not likely that large acreages in the HMA could be transitioned to this state. Doing so would require treating sagebrush on almost 11,000 acres within the HMA, followed by prescribed grazing which is difficult to achieve with wild horse management. However,

maintaining acreage already in the preferred states (Sagebrush/mixed grass and Sagebrush bunchgrass) identified in the model is the achievable objective. The sage/rhizomatous wheatgrass state is less valuable primarily because it provides less forage for grazing animals, and is susceptible to erosion. The rabbitbrush/rhizomatous wheatgrass and cheatgrass states are grouped in the model below, as these are the least desired states, with a cheatgrass dominated community being the ultimate negative. These states provide very little forage to grazing animals, and are highly susceptible to erosion, it is also difficult to transition from these states without costly and time consuming management. The dashed arrow shows a transition from these states to the desired plant community following chemical seedbed preparation including application of herbicide to control invasive species, brush management, re seeding, and prescribed grazing which would likely be non-use by any grazing animal. This transition is shown in a dashed line because this transition would not likely be achievable in the short term, following management changes due to the timeframe needed to realize change to the DPC which could be decades, as well as grazing management necessary to achieve this transition would require deferment of all grazing within these areas inside the HMA.

Forage Production

Utilization studies within key monitoring areas of the HMA using the Key Forage Plant method (BLM Technical Reference 1734-3) were conducted in April 2011, Map 3-2 shows the location of utilization study sites, use distribution, and the locations of long term trend transects presented below. Utilization levels within key areas historically densely occupied by wild horse populations primarily in the Barcus-Pinto unit of the HMA show moderate to heavy grazing, there are many sites within these areas of historic occupation which are beginning to incur levels of grazing near heavy levels and above the 40% threshold on key species which is considered the maximum level of utilization on the key species under year long grazing to achieve moderate grazing levels (Holechek, 1988), and avoid ecological damage as a result of overutilization. Historically as the Piceance portion of the HMA becomes overpopulated, wild horses tend to use the Barcus-Pinto unit on a continuous rather than seasonal basis. A summary of data collected in 2011 is included below in Table 3-4; data summary for all sites is included as Appendix G, photo documentation of 2011 utilization studies is included as appendix H, a map of use distribution is included as Map 3-2.

Figure 1: State and Transition model

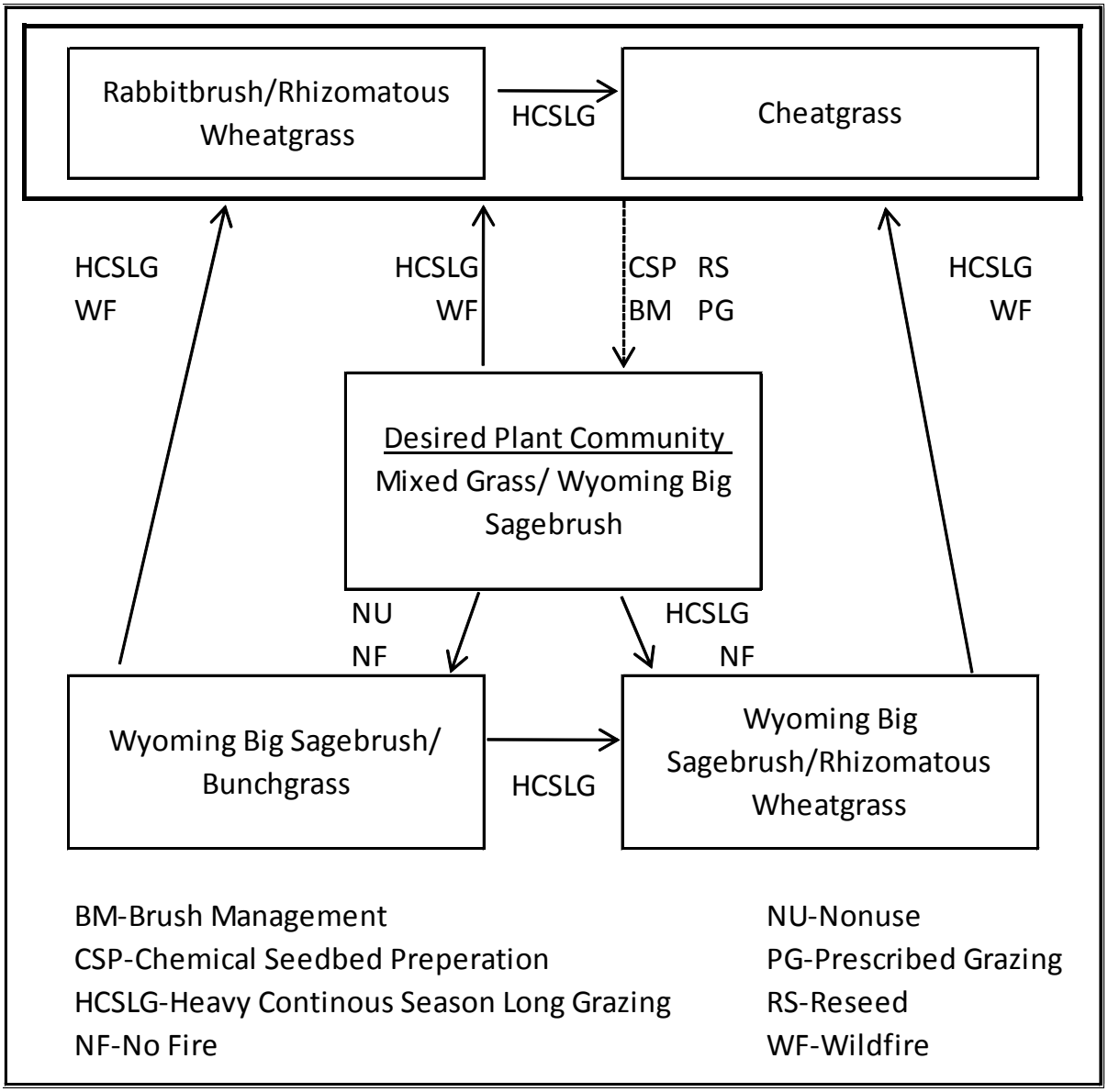

Table 3-4. Utilization Data Collected April 2011

Site	Western Wheatgrass	Basin Wildrye	Indian Ricegrass	Woody Shrub	Sandberg Bluegrass	Wheatgrass Species	Needle and Thread	Prairie Junegrass	Russian Wildrye
MT-1		10%				***37%***			
MT-2		10%	30%			***38%***			

MT-3		40%	42%			***43%***			
MT-4			53%	***58%***		50%			
MT-5				***58%***		40%			
MT-6					48%	***60%***			
MT-7		30%	48%			***55%***			
MT-8			50%			40%	***57%***		
MT-9						***24%***			
MT-10					41%	***43%***			
MT-11			40%			***50%***			
MK-1	61%		***70%***				40%		
MK-2	***60%***								
MK-3	***38%***				10%				
MK-4	***85%***				80%				
MK-5	70%		***74%***		70%				
MK-6	60%		***70%***		***70%***				
MK-7	57%		57%		***70%***				
MK-8	60%		***70%***		60%				
TT-1			***53%***			47%			
TT-2			50%			***54%***			
TT-3	50%		***68%***						
TT-4		50%				***55%***			
TT-5	55%		***62%***		55%				
TT-6	21%				***34%***				

TT-7	***28%***								
TT-8	***27%***								
TT-9	***29%***				20%				
TT-10	***31%***				26%				
TT-11	***29%***								
TT-12			***36%***						
TT-13			***28%***						
TT-14	28%		***57%***						
TT-15	22%						***46%***		
MD-1					34%			***40%***	
MD-2					48%			***57%***	
MD-3					***34%***			30%	
MD-4					***25%***		20%	23%	
MD-5					***18%***			16%	
MD-6	***21%***				17%		***21%***		
MD-7	***38%***				30%				
MD-8									***26%***
MD-9	16%				10%			***18%***	

Bold/Italic => Highest level of use at site

SLIGHT	LIGHT	MODERATE	HEAVY	SEVERE

Utilization data can be helpful in determining a plant community's ability to meet standards for public land health. Standard 3 for Public Land Health in Colorado is: healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes. There are eight indicators

for this standard which are observable on the land, and can be used in determining rangeland health, these indicators are: 1) noxious weeds and undesirable species are minimal in the overall plant community; 2) native plant and animal communities are spatially distributed across the landscape with a density, composition, and frequency of species suitable to ensure reproductive capability and sustainability; 3) plants and animals are present in mixed age classes sufficient to sustain recruitment and mortality fluctuations; 4) landscapes exhibit connectivity of habitat or presence of corridors to prevent habitat fragmentation; 5) photosynthetic activity is evident throughout the growing season; 6) diversity and density of plant and animal species are in balance with habitat/landscape potential and exhibit resilience to human activities; 7) appropriate plant litter accumulates and is evenly distributed across the landscape; 8) landscapes are composed of several plant communities that may be in a variety of successional stages and patterns. Of the eight indicators of Standard 3, four of these are further discussed below.

Two indicators directly correlated to utilization include; 5) photosynthetic activity is evident throughout the growing season and 7) appropriate plant litter accumulates and is evenly distributed across the landscape. These two indicators are directly related to the amount of plant which is physically removed by grazing. At unacceptable utilization levels throughout the growing season, rangeland plants will have little opportunity for regrowth to produce photosynthetic material as it is removed through grazing in order to maintain photosynthetic activity and complete their annual growth cycle, which will also reduce plant vigor. Plant litter accumulation serves important ecological functions including decreasing runoff and increasing infiltration, at repeated unacceptable use levels, plant parts are grazed before they can break off and accumulate as litter, without litter accumulating on the soil surface, water is not slowed down in plant interspaces and runoff increases.

Another indicator of rangeland health is 2) native plant and animal communities are spatially distributed across the landscape with a density, composition, and frequency of species suitable to ensure reproductive capability and sustainability. Following continued overuse of vegetation, individual plants begin to fall out of established communities, reducing the density and reproductive capability and ultimately the sustainability of those desired plant communities, many of which are very valuable sources of forage for wild horses within the HMA. 6) Diversity and density of plant and animal species are in balance with habitat/landscape potential and exhibit resilience to human activities is another indicator of Standard 3 for rangeland health. Diversity of rangeland plants within varying plant communities is important to wild horse health, a “balanced diet” of different plant species which provide essential nutrients throughout the various seasons is necessary to maintain healthy wild horse herds. Repeated overutilization of vegetation susceptible to damage from continuous season long grazing will allow other more grazing tolerant species to replace weakened stands within vegetation communities. Grazing tolerant species may either establish or increase in the area, the loss of diversity within a landscape may result in loss of important forage species which provide valuable sustenance during an annual season such as during the summer months when many other forage species are unpalatable or provide little nutrition to wild horses.

Proper utilization of rangeland forage is an important factor to avoid damaging and often irreversible transitions to less productive undesirable rangelands. “If herbage removal exceeds a certain critical point, however, most plants will lose vigor, produce less herbage, and eventually

die. "Proper utilization is the maximum point of defoliation which continues to maintain desirable range productivity or to improve poor range" (Heady, Child 1994). Maintaining proper use of vegetation within the HMA by wild horses, livestock, and wildlife is necessary to ensure that standards for rangeland health continue to be met, or move towards meeting those standards in areas which are not meeting. Vegetation communities which meet the standards for rangeland health and are not jeopardized by over use provide sustainable habitat and forage resources to maintain a thriving healthy population of wild horses within the HMA.

One key forage species for wild horses, livestock, and wildlife which occurs largely throughout the analysis area is Indian ricegrass. This grass species is a valuable forage plant for all grazing animals due to its palatability, and sustained nutrient value into maturity. Indian ricegrass was observed at 18 of the 43 vegetation monitoring study sites. Utilization levels on this species were high moderate to heavy (above 50%) within 12 of the 18 sites. Utilization levels were low moderate (41%-49%) within 2 of the 18 sites, and use on the remaining 4 sites ranged from 28% to 40%. The United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) plant guide recommends moderate grazing on Indian ricegrass in winter and early spring will benefit populations of this species, however if the population does not receive adequate rest during the growing season, Indian ricegrass populations will deteriorate under heavy grazing. Indian ricegrass stands weakened by continual heavy grazing will likely be replaced by less valuable forage species such as Sandberg Bluegrass. The current utilization levels of Indian ricegrass suggest use levels at or above acceptable levels for species maintenance and stand improvement within key areas of the HMA, and to avoid transitional thresholds in which Indian ricegrass will begin to decrease as well as decreasing the amount of annual forage production of these sites.

Utilization data collected from 2003 to 2005 preceding a wild horse gather in 2006 is included below. Data collected below indicate use levels similar to or slightly higher than use levels seen in April 2011. This information is provided to illustrate the continuous moderate to heavy use placed on these key forage species over an extended period (10 years).

Table 3-5: Piceance Portion HMA Utilization Summary 2003-2005

Key Area	Season of Use C-Cattle H-Horse				% Utilization By Species						
	Spring	Summer	Fall	Winter	Indian Rice Grass	Western Wheat Grass	Bluebunch Wheat Grass	Blue Grass (mutton/sandberg)	Thick spike Wheat grass	Needle and Thread	Winter fat
2003											
Pinto Mesa	C,H	H	C,H	C,H	63	50		60			63
Pinto Gulch	C,H	H	C,H	C,H	70	44		60		62	
Pinto Gulch	C,H	H	C,H	C,H		70	50			61	
Pinto Mesa	C,H	H	C,H	C,H		55	70	70		66	
Pinto Mesa	C,H	H	C,H	C,H		60		60		69	

Table 3-5: Piceance Portion HMA Utilization Summary 2003-2005

Key Area	Season of Use C-Cattle H-Horse				% Utilization By Species						
	Spring	Summer	Fall	Winter	Indian Rice Grass	Western Wheat Grass	Bluebunch Wheat Grass	Blue Grass (mutton/sandberg)	Thick spike Wheat grass	Needle and Thread	Winter fat
2004											
Middle Barcus	C,H	H	C,H	C,H	56		66				
Middle Barcus	C,H	H	C,H	C,H			50	23			68
North Barcus	C,H	H	C,H	C,H	56		64		54		
North Barcus	C,H	H	C,H	C,H	64		70		57		
Pinto Mesa	C,H	H	C,H	C,H		35		50		45	
Pinto Mesa	C,H	H	C,H	C,H				50		44	
Pinto Mesa	C,H	H	C,H	C,H	50		54			49	
Pinto Mesa	C,H	H	C,H	C,H	68		53			50	
Pinto Mesa	C,H	H	C,H	C,H		45				59	
2005											
North Barcus	C,H	H	C,H	C,H	85		84		81		
North Barcus	C,H	H	C,H	C,H	76		78		76		
North Barcus	C,H	H	C,H	C,H	66	43	64				
Pinto Mesa	C,H	H	C,H	C,H	60		64			50	
Pinto Mesa	C,H	H	C,H	C,H		35	63			56	
Pinto Mesa	C,H	H	C,H	C,H	63		70				
Pinto Mesa	C,H	H	C,H	C,H	70	59				60	

Table 3-6. East Douglas Portion HMA Utilization Summary 2001, 2005

Year	Key Area	Season of Use C-Cattle H-Horses				% Utilization By Species					
		Spring	Summer	Fall	Winter	Western Wheat Grass	Crested Wheat grass	Pubescent wheatgrass	Orchard grass	Bluebunch wheatgrass	Carex
2001	Willow Cr Fire	C,H	H	C,H	H		37	47	90		
2001	Tommy's Uplands	C,H	H	C,H	H	43				43	
2001	Tommy's Bottom	C,H	H	C,H	H	70					
2001	Tommy's Pipeline	C,H	H	C,H	H			70			
2001	Wild Rose	C,H	H	C,H	H	42					
2001	Horse Pasture	C,H	H	C,H	H	50					
2005	Willow Cr Fire	C,H	H	C,H	H		Not Found	84	Not Found		
2005	Tommy's Uplands	C,H	H	C,H	H	50					50
2005	Tommy's Bottom	C,H	H	C,H	H		90	90			
2005	Tommy's Pipeline	C,H	H	C,H	H			90			
2005	Wild Rose	C,H	H	C,H	H	40					
2005	Horse Pasture	C,H	H	C,H	H			70			

The BLM has collected long term trend within the HMA, tables 3-6 to 3-9 below show data collected in 1995, 2001, and 2007. The method used to collect long term trend data was the Daubenmire canopy cover transect method. A repeatable permanent line is established and 20cm x 50cm plots are measured off this line. The Daubenmire canopy cover transects measure plant frequency and cover and from those values, percent plant composition by cover can be determined (BLM Technical Reference 1734-4). Data was collected in four key areas within the Yellow Creek grazing allotment. Data was then summarized by key forage species for that area.

In general, there has been a continual decrease in percent canopy cover and percent species composition that is contributed by perennial grass species. There has also been a decrease in the amount of litter contributing to canopy cover. This may be a sign of over-utilization. Vegetation

species which have shown an increase include Wyoming Big Sagebrush and the invasive annual cheatgrass. The long term trend tables below indicate a slowed decrease of perennial grass species between 2001 and 2007. This is likely due to continuous season long use at documented use levels too high for that grazing strategy. Because these sites were read in 2007, they were not read again in 2010 as it is too soon between data collection to document any changes in trend, long term trend sites using the Daubenmire method are generally read every five years

Table 3-7: Trend Site 6035-4, Barcus-Pinto Pasture, Channery loam soil type

YEAR	1995		2001		2007		Change From 2001 to 2007	
ATTR.	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP
Indian Ricegrass	1.6	3.6	1.6	5.2	0.4	1.4	1.2% Decrease	3.8% Decrease
Beardless Wheatgrass	13.6	31	12.8	42.9	7.8	29	5% Decrease	13.9% Decrease
Cheatgrass	2.75	6.3	1.7	5.6	5.4	20	3.7% Increase	14.4% Increase
Needle and Thread	1.12	2.5	0.7	2.3	0.8	3	0.1% Increase	0.7% Increase
Clasping Pepperweed	20.1	45.9	4.3	14.4	0	0	4.3% Decrease	14.4% Decrease
Bare Ground	31.6	X	50.4	X	55.9	X	5.5% Increase	X
Litter	14	X	15.4	X	10.2	X	5.2% Decrease	X

Within this key area, Indian ricegrass, and beardless wheatgrass show a decrease in canopy cover and species composition, while cheatgrass and bare ground are increasing, this is a downward trend toward the least desirable plant community.

Table 3-8: Trend Site: 6035-3, Middle Barcus, Rolling Loam Ecological Site

YEAR	1995		2001		2007		Change From 2001 to 2007	
ATTR.	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP
Indian Ricegrass	0.12	0.3	0.1	0.3	Trace	0.4	Trace	0.1% Increase
Western Wheatgrass	9.25	25.9	5.9	17	2	8.6	3.9% Decrease	8.4% Decrease
Needle and Thread	4.25	11.9	4.2	12.1	0.9	4	3.3% Decrease	8.1% Decrease
Wyo Big Sagebrush	0.12	0.3	0.1	0.3	0.4	1.7	0.3% Increase	1.4% Increase
Cheatgrass	0.12	0.3	0.4	1.2	2.4	10.3	2.0% Increase	9.1% Increase
Bare Ground	40.4	X	72.9	X	60.8	X	12.1% Decrease	X
LITTER	14.1	X	9	X	9.9	X	0.9%	X

							Increase	

The key vegetation species for this area include Indian ricegrass, and needle and thread. Only trace amounts of Indian ricegrass were found at the site, while needle and thread continues to decline. The rhizomatous western wheatgrass, is also decreasing while cheatgrass and Wyoming big sagebrush have increased, this indicates a downward trend toward the least desirable cheatgrass dominated vegetation community.

Table 3-9 : Trend Site: 6030-5, 84 Mesa, PJ woodland/Rolling Loam Ecological Site

YEAR	1995		2001		2007		Change From 2001 to 2007	
ATTR.	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP
Wyo Big Sagebrush	6.8	26	7.6	22	11.4	45.8	3.8% Increase	23.8% Increase
Western Wheatgrass	2.5	10	4.3	12	3	12	1.3% Decrease	No Change
Needle and Thread	0.87	3	2.7	8	3.3	13	0.6% Increase	5% Increase
Cryptantha	2.4	9	1.6	5	3	12	1.4% Increase	7% Increase
Carex	1.9	7	0.6	2	1.1	4.5	0.5% Increase	2.5% Increase
Bare Ground	52.5	X	64.4	X	47.1	X	17.3% Decrease	X
LITTER	13	X	9	X	7.4	X	1.6% Decrease	X

Between 1987 and 1990, this area was degraded. Needle and thread showed a favorable increase in 1990 to 2.0% increase in canopy cover, and 8.8% increase in species composition, as it was not found in 1987. By 2007 needle and thread shows a slight increase while Wyoming big sagebrush has increased rapidly, accounting for nearly half of the vegetation community along the transect. The increase of needle and thread from 2001 to 2007, as well as the decrease in bareground would indicate an upward trend.

Table 3-10: Trend Site: 6030-6, 84 Mesa (plot established 7/8/97), Rolling Loam Ecological Site

YEAR	1997		2001		2007		Change From 2001 to 2007	
ATTR.	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP
Wyo Big Sagebrush	25.5	49	11.3	37	14.4	63.8	3.1% Increase	26.8% Increase
Western Wheatgrass	9.7	19	2.3	8	1.5	6.6	0.8% Decrease	1.4% Decrease
Needle and Thread	1.9	4	0.3	1	0.3	1.1	No Change	0.1% Increase
Junegrass	0.2	Trace	0.1	1	0	0	0.1% Decrease	1% Decrease

YEAR	1997		2001		2007		Change From 2001 to 2007	
ATTR.	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP	%CANOPY COVER	%SPECIES COMP
Witnerfat	1.1	2	1.3	4	1.3	5.8	No Change	1.8% Increase
Indian Ricegrass	3	6	0.7	2	0.5	2.2	0.2% Decrease	0.2% Increase
Bare Ground	Not Recorded	X	70.1	X	69.9	X	1% Decrease	X
LITTER	Not Recorded	X	11.9	X	7.4	X	4.5% Decrease	X

This site was established in 1997 following a wildfire. Needle and thread and Indian ricegrass have both decreased from establishment to 2007 while Wyoming big sagebrush has continually increased, the increase in sagebrush is expected following a wildfire as the community transitions to a sagebrush/bunchgrass site. Key species in this area have not rapidly decreased or been lost following the wildfire, bare ground has also been decreasing. It is also important to note that cheatgrass has not been recorded at this site. This site does not show a transition to the less desirable plant communities.

Noxious Weeds

Noxious weeds and their continued encroachment on BLM administered lands represent a serious threat to the continued productivity, diversified use and aesthetic value of the WRFO's public lands. The BLM currently has an active noxious weed management program which emphasizes cooperation with Rio Blanco County, private landowners and BLM permitted land users. The WRFO weed management program is based in part on the 1990 White River Resource Area Noxious Weed Management Plan, the priorities established by the *Record of Decision, Vegetation Treatment on BLM Lands, 13 Western States* (BLM 1991), the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement. (*BLM, 2007a), and the White River Field Office Integrated Weed Management Plan, DOI-BLM-CO-110-2010-0005-EA.

The WRFO, in accordance with previous NEPA, completes annual treatments of weed infested areas. The current program uses an integrated management approach using: (1) chemical control using BLM approved chemicals, (2) biological control insect releases focused on leafy spurge, musk and Canada thistles, (3) mechanical control primarily digging of initial infestations of biennial noxious weed species, and (4) management to maintain competitive vegetation to prevent noxious weed invasion and spread. All aspects of this program have been effective where they have been applied. Within the analysis area livestock grazing permittees and energy exploration and development companies cooperate with the BLM in conducting and participating in weed control treatments.

Within the HMA there have been a number of outbreaks of noxious weeds. Noxious weeds of concern include cheatgrass, thistles (bull, musk, scotch and Canada), knapweeds (spotted, diffuse and Russian), burdock, hoary cress, mullein, black henbane and houndstongue. Noxious weed

species are introduced in the area through a variety of vectors including: transport of seed or plant parts by animals, transport on machinery and vehicles, wind, and invasion from adjoining rangelands Of those noxious weed species which are controlled by direct control methods, there has been good success at containing the initial outbreaks.

Wetland-Riparian

The primary riparian areas within the analysis area are Douglas Creek, Yellow Creek (tributary to White River) and Ryan Gulch (tributary to Piceance Creek). Overland runoff to these streams results mostly from snowmelt and rainstorms in spring and short-duration, high- intensity rainstorms in summer. Most streams within the Douglas Creek, Piceance Creek and Yellow Creek basins are intermittent, meaning some reaches have no flow while other reaches may have perennial flows. Base-flow to these streams originates principally from springs and other ground water inputs. Depending on the water quality of springs that feed surface waters, the salinity of surface waters can change dramatically. Field work on Yellow Creek in the summer of 2010 measured specific conductivities of 2,800 to over 4,000 µS/cm from Barcus Creek to the confluence with Greasewood Creek.

A number of perennial or intermittent systems support riparian vegetation, both within (e.g., Left Fork Stake Springs Draw, Box Elder and Corral Gulch, Duck and Yellow Creeks, Tommy's Draw, and East and mainstem Douglas Creeks) and outside (e.g., Spring Creek, Boise Creek) the HMA. Common riparian species would include such plants as Nebraska sedge, beaked sedge, Baltic rush, coyote and bebb willow, cottonwood, and boxelder.

Persistent, long duration use through the growing season invariably reduces the vigor and density of herbaceous components and prompts shifts in composition to grazing or trampling tolerant species such as redtop, Kentucky bluegrass, dandelion, and yarrow plus invites the establishment and proliferation of noxious weeds. These shallow and relatively weakly-rooted species provide little resistance to erosion and are incapable of supporting proper functioning channel conditions. This situation is most applicable on two miles of the Left Fork of Stake Springs, three miles of Tommy's Draw, and some less confined reaches within the lower six to eight miles of Yellow Creek channels.

Special Status Species

Two plant species listed as federally threatened (FT) and four plant species listed as BLM sensitive species (BS) occur within the areas of consideration for this removal action and are listed below in Table 3-11.

Table 3-11. BLM Sensitive, Threatened and Endangered Plant Species within the WRFO.

SPECIES	COMMON NAME	STATUS	LOCATION
Gentianella tortuosa	Cathedral Bluffs Dwarf Gentian	BS	South Cathedral Bluffs ACEC
Gilia stenothyrsa	Narrow-Stem Gilia	BS	Lower Greasewood ACEC
Physaria congesta	Dudley Bluffs Bladderpod	FT	Duck Creek ACEC Lower Yellow Creek

SPECIES	COMMON NAME	STATUS	LOCATION
Lesquerella parviflora	Piceance bladderpod	BS	South Cathedral ACEC Upper Greasewood ACEC
Physaria obcordata	Dudley Bluffs Twinpod	FT	Lower Yellow Creek
Thalictrum heliophilum	Sun-Loving Meadowrue	BS	South Cathedral ACEC

All six plants occur on barren to semi-barren white shales of the Green River Formation, with the exception of the narrow-stem Gilia, which is found on the Uinta Formation.

The BLM in cooperation with Colorado Natural Habitat Areas Program (CNAP) have established monitoring studies within the HMA on five of the six species populations.

Monitoring studies in the South Cathedral Bluffs ACEC have indicated stable populations for the Utah gentian, the Piceance bladderpod and the sun-loving meadow-rue. All three plants occur on shale barrens that are moderately to very steep and are not foraged upon by large herbivores due to the stature of the plant, steepness of the slope and the barrenness of their habitat. Monitoring data has not indicated that wild horses have occupied the habitats for these three species.

Likewise, monitoring studies for the narrow-stem Gilia in the Lower Greasewood ACEC have shown very little use of this plant's habitat by wild horses. Its habitat is also shale barrens on very steep slopes. Monitoring has indicated populations to be stable and is not foraged upon by large herbivores.

Two monitoring sites for the Dudley Bluffs bladderpod occur in the Duck Creek ACEC, one within the HMA and one within Pasture B of the Square S allotment. The BLM established both monitoring sites in May 1996, and has monitored each one, eight times since their establishment. The most recent monitoring was conducted in May 2007. The monitoring study within the HMA has shown a declining trend with a 68 percent decrease in the density of the Dudley Bluffs bladderpod since the site's establishment. The monitoring study outside the HMA within Pasture B showed a 7 percent decline in the density of the Dudley Bluffs bladderpod from 1996-2007.

Trampling damage by wild horses was noted at both study sites. The damage noted was from wild horses trailing across the study sites, from some wild horses rolling in the seemingly barren soil and from some wild horses scuffling and fighting. In most cases due to the weight of the animal and the size of their hooves, some individual plants that were trampled were uprooted or severed at the crown resulting in death of the plant. There are two known locations of the Piceance twinpod within the area under consideration, one population within the HMA and a similar sized population in Pasture A of the Square S allotment. Both populations occur on the east slope of lower Yellow Creek. Both populations contain about 200 plants and are located on the upper third of very steep slopes. No monitoring studies occur for the Piceance twinpod within the area under consideration. No evidence has been observed at either site that wild horses or any other large herbivore occupy these sites in a manner that is detrimental to the endangered plants.

3.4.3 WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Wildlife, Terrestrial

Terrestrial wildlife inhabiting the analysis area, and upon which management emphasis is placed, include: big game (mule deer and elk), blue grouse, and special status non-game species (e.g. raptors).

Big game: The analysis area encompasses the seasonal ranges of both mule deer and elk associated with Game Management Units (GMU) 21 (Douglas Creek watersheds) and 22 (Piceance/Yellow Creek watersheds) (Map 3-3).

The Colorado Division of Wildlife (CDOW) recently revised its big game range mapping for GMUs 21 and 22. The coincidence of wild horse distribution relative to seasonal big game range by GMU is presented below in Table 3-12, both for current distribution (project area) and that encompassed within the authorized HMA.

Table 3-12. Relative extent (%) of Game Management Unit seasonal big game ranges within the project area and within HMA.

Seasonal Ranges	**Deer**				**Elk**			
GMU	GMU 22		GMU 21		GMU 22		GMU 21	
	Project Area %	HMA %	Project Area %	HMA %	Project Area %	HMA %	Project Area %	HMA %
Summer Range	22	13	14	3	38	17	13	0
All Winter Ranges	45	22	33	13	43	18	34	10
Severe Winter Range	71	25	19	17	0	0	0	0
Critical Winter Range	39	36	46	13	40	0	90	0
Winter Concentration Area	7	0	21	3	20	1	37	0

Presently, about 62,000 deer make up the White River deer herd, which includes the Piceance Basin (GMU 22). This figure is about 10% lower than CDOW's long-term population objective. In the project area, summer use is relegated to higher elevation pinyon-juniper woodlands, mixed and mountain shrub communities, and aspen woodlands above 7600' along the Cathedral Rim, Calamity Ridge and Magnolia. In September and October, deer begin moving into interior pinyon-juniper woodlands and mixed shrub and sagebrush shrublands below 7600' and by February gravitate to lower elevation late winter ranges along Piceance Creek (below ~6500'). GMU 21 is associated with the Douglas Pass (Bookcliff) deer herd. Deer in GMU 21 have seasonal use patterns similar to that described above; the majority of range encompassed by the project area fulfills winter range functions. This herd is currently at the upper end of the desired population objective of 10,000-12,000 deer.

The mid to late winter/early spring period (December to early May) presents the greatest nutritional challenge for deer, in part, because the quantity and accessibility of forage is constrained by snow accumulations and the nutritional properties of available forage are low. Adequate forage volume and quality are essential for avoiding excessive and irreversible weight loss that results in excessive winter mortality and inadequate fetal development. Under heavy

snow conditions and under normal circumstances by February, deer are often relegated to south facing slopes on late winter ranges (i.e. severe winter ranges) which offer moderated daytime temperatures and snow depth. Although forage volume is small, south-facing slopes promote early herbaceous emergence and minimal constraint in accessing forage. Severe winter ranges are those that by virtue of elevation and aspect moderate the effects of snow depth and temperatures during winters of heavy snowfall and extreme cold. They are specifically defined as that part of the winter range where 90% of the animals are located when snowpacks are at their maximum, in the worst two years out of 10, but receive consistent annual use by large numbers of animals in the late winter and early spring months. Critical winter ranges are severe winter ranges that overlap those portions of the winter range that tend to assume animal densities double those of surrounding winter ranges.

In March and April, deer seek and make increasing use of emerging herbaceous forage (up to 40% grasses). Early spring (April-May) forage supplies and availability are essential for increasing the physical condition of deer recuperating from winter deficiencies in preparation for spring movements, accelerated fetal growth and development, and subsequent lactation. Summer diets (June-August) involve 60-90% herbaceous forage, primarily forbs. As forbs progress toward dormancy with the onset of warmer and drier summer conditions, their nutritional value declines, and management that prolongs the availability of succulent, high quality forage is of great advantage. As the sites producing fresh herbaceous material decline through late fall, browse begins to assume a dominant and nutritionally superior dietary fraction. Throughout this period (August through December), deer must assimilate nutrients and energy in excess of need, thereby allowing for the production and storage of fat and protein reserves in preparation for winter. Nutritional assimilation is strongly enhanced by a diverse diet, regardless of season. There are indications that periodically depressed deer production and low winter fawn survival in the Piceance and Douglas populations are indicative of forage-related deficiencies on ranges occupied outside the late winter season (i.e. spring and early winter). CDOW has responded to this issue, in part, by reducing herd objectives in the Douglas and Piceance Basins and adopting a management strategy of maintaining smaller, more resilient herds with enhanced productivity and reduced winter carryover. DOW is also continuing to curb/reduce the rate of elk expansion in Piceance and Douglas Basins through regulated harvest.

Elk in GMUs 21 and 22 generally use much of the project area on a year-round basis, but follow seasonal use patterns similar to deer. Elk populations associated with these GMUs are within the desired range of CDOW's long-term population objectives. CDOW intends on continuing to manage for stable numbers of elk at newly established population levels. Elk diets tend to be dominated by grasses throughout the year.

Dusky (formerly blue) grouse: Higher elevation shrubland (above 7200') and forest communities along Calamity Ridge and the Cathedral Rim provide year-long dusky grouse habitats. Nesting, brood-rearing, and general summer and fall use functions involve mixed shrub, aspen, and higher elevation big sagebrush habitats. The project area range encompasses roughly 20 and 30% of the potential dusky grouse habitat available in GMU 21 and 22, respectively. The HMA itself encompasses about 4 and 10 percent of their habitat in GMU 21 and 22, respectively.

Mixed shrub communities on mild slopes offer habitat best suited for dusky grouse nesting and early brood rearing functions, whose timeframes closely parallel that of sage-grouse (see Threatened and Endangered Animal section). Heavier deciduous shrub canopies and steeper slopes are used more often as broods mature. The height and density of the herbaceous understory is an important factor in the suitability of dusky grouse nest and brood-rearing habitats. Well developed herbaceous understories are thought to provide scent, visual and physical barriers to potential predators and provide microclimatic conditions conducive to improved hatching success. Diets of grouse chicks are comprised almost exclusively of forbs and invertebrates. After the first snows (~by mid-October), blue grouse distribution is strongly associated with mature Douglas-fir stands.

Raptors/Non-game: Raptor nesting activities (i.e. hawks, eagles, and owls) are dispersed throughout the project area in pinyon-juniper woodlands (e.g. Cooper's hawk, long-eared owl) and on rock outcrops (e.g. red-tailed hawk, golden eagle). The bulk of nest activities are normally complete by early August, but late attempts or renesting can lapse through the first two weeks of August. Although limited, nesting records for all potentially affected species indicate that virtually all buteo hawks, eagles, and owls would successfully fledge young by late July. Conversely, about 15% of accipitrine hawk nesting attempts (i.e., sharp-shinned and Cooper's hawks) would not have fledged young by early August. The maintenance of raptor populations (production and recruitment) is largely dependent on its small mammal and bird prey base. Gather-related impacts are not anticipated to have any effective influence on raptor nesting activities as they are scheduled to occur during late September, well outside of the raptor nesting season.

Non-game bird and small mammal communities generally respond positively to increasing vegetation diversity, volume, and structural complexity. Particularly in the case of small mammals and shrub and ground-nesting passerine birds, increasing height and density of persistent herbaceous ground cover as a source of cover, forage (e.g., herbage, seed), and forage substrate (e.g., invertebrates) can be expected to allow for more continuously and extensively occupied habitat, increased density of breeding pairs, improved reproductive performance, and enhanced over winter survival (mammals). Non-game populations associated with the upland communities, particularly pinyon-juniper woodlands and dense mountain shrub slopes that retain more fully developed understories, likely occur at densities that approach habitat potential. Community diversity and breeding densities, especially in annual (i.e., cheatgrass) dominated bottomland communities are likely strongly suppressed and considerably below their potential. The abundance of non-game animals associated with gentle gradient upland shrub types where the ecological status of herbaceous ground cover has shifted to more grazing tolerant species (e.g., native bluegrasses, western wheat grass) or invasive annuals (cheatgrass) are likely suppressed to some degree, but population viability probably remains relatively intact.

Wildlife, Aquatic

Mainstem Douglas Creek, East Douglas Creek, Cathedral Creek, and Yellow Creek are the only systems capable of supporting higher order aquatic habitats (i.e., vertebrate forms) within the area occupied and potentially influenced by wild horses. Those portions of mainstem Douglas that are influenced by the HMA and East Douglas Creek are proper functioning systems that

have sustained a long term improving trend in aquatic habitat conditions. Lower East Douglas Creek, a willow-dominated system heavily colonized by beaver, is occupied throughout its length by speckled dace, chorus and northern leopard frogs, and occasionally by Colorado River cutthroat trout (CRCT) that disperse from upstream reaches. Enhanced flow delivery from East Douglas Creek has initiated improving trends in mainstem Douglas such that willows continue to expand downstream and laterally as does the persistence and extent of beaver occupation. At the present time and in spite of flow variability and heavy periodic sediment loads that severely limits habitat conditions for fish and other vertebrate forms; Douglas Creek persists in supporting discontinuous populations of speckled dace.

About 0.75 miles of lower Cathedral Creek lie within the HMA boundary. Similar to East Douglas Creek, Cathedral Creek is regularly occupied by beaver and supports amphibians and speckled dace. Cathedral Creek below Soldier Creek is thought to be capable of supporting CRCT, but no trout have been recently documented from this area. Soldier and Lake Creek, which drain into Cathedral Creek, support small, representative populations of CRCT.

Beaver have sporadically occupied portions of lower Yellow Creek, a large sedge-dominated system, over the past 20 years, but within three miles of the White River, recent occupation by beaver has tended to be more expansive and prolonged. Periodic monitoring of Yellow Creek since autumn 2001, primarily by private concerns, indicates that Yellow Creek below Barcus Creek supports a predominantly native aquatic community composed of speckled dace, mountain sucker, and northern leopard frog. The fish were found in all age-classes in nearly all seasons and years and suggest that these populations are self-sustaining. Aquatic habitat at the mouth of Yellow Creek is strongly influenced by fish population in the White River. In addition to dace and mountain sucker, the lowest reach of Yellow Creek was found to be occupied consistently by introduced fathead minnow and periodically by juvenile carp (introduced) and flannelmouth sucker (native), and adult brown trout (introduced).

Migratory Birds

A large array of migratory birds are known to nest throughout the proposed project area's woodland and shrubland habitats during the months of May, June, and July. Species associated with these shrubland and woodland communities are typical and widely represented in the Resource Area and the region. Those bird populations associated with this Resource Area's shrublands and pinyon-juniper identified as having higher conservation interest (i.e., Rocky Mountain Bird Observatory Partners in Flight program) are listed in Table 3-13 below. Several of these birds have also been identified for enhanced management attention by federal agencies, including USFWS BOCC and Colorado BLM-sensitive species. These birds are typically well distributed in extensive suitable habitats. Species classified with the forest types (aspen/fir) are best associated with limited aspen and Douglas fir stands along the Cathedral Rim—a habitat type that does not normally attract or sustain wild horse use.

Table 3-13. Birds of Higher Conservation Interest by Habitat Association in HMA vicinity

	Habitat Association			
	Sagebrush	**Pinyon-juniper**	**Mountain shrub**	**Aspen/fir**

	Habitat Association			
	Sagebrush	**Pinyon-juniper**	**Mountain shrub**	**Aspen/fir**
Birds	Brewer's sparrow*[1], green-tailed towhee	Gray flycatcher, pinyon jay*, juniper titmouse*, black-throated gray warbler, violet-green swallow, Cassin's finch*, northern goshawk[1]	Dusky grouse, common poorwill, Virginia's warbler	Flammulated owl*, red-naped sapsucker, purple martin, Cordilleran flycatcher, MacGillivray's warbler

*Birds of Conservation Concern (USFWS 2008)
[1]Colorado BLM sensitive species

Portions of perennial or intermittent systems inside the HMA boundary (e.g., Left Fork Stake Springs Draw, Duck Creek, Box Elder Gulch, Corral Gulch, Yellow Creek, Tommy's Draw, and the East and mainstem of Douglas Creek) and those outside the HMA boundary (e.g., Spring Creek, Boise Creek) sporadically support a simple contingent of riparian-affiliated migratory birds (e.g., rough-winged swallow, song sparrow). Larger systems (i.e., East and mainstem Douglas Creeks) are represented by better developed willow and sedge-dominated riparian vegetation that supports richer avian communities that include such members as yellow warbler, blue grosbeak, yellow-breasted chat, and willow flycatcher.

Special Status Species

Listed Species: The endangered Colorado pike-minnow occupies the lower White River below Taylor Draw dam and Kenney Reservoir—a mainstream impoundment. The White River and its 100-year floodplain below Rio Blanco Lake have been designated as critical habitat for the fish. This river reach, from Piceance Creek to Douglas Creek, forms the northern boundary of the proposed project area. About 15% of the project area (primarily Douglas Creek) drains directly into occupied habitat below Taylor Draw dam; the remaining 85% passing first through Kenney Reservoir before entering occupied habitat. The White River is known to harbor only adult and sub-adult fish in Colorado; collections to date have not yielded any larval or young-of-year fish which would indicate spawning or nursery areas.

BLM Sensitive Species: A number of animals that may inhabit the analysis area are classified as sensitive species by the BLM. These species are thought to be especially susceptible to population-level influences. It is the policy of the BLM to identify these species on a state-specific basis and ensure that BLM actions do not contribute to their becoming candidate for listing under the Endangered Species Act. Sensitive species that are known to occur or have a reasonable probability of occurring in the project area include: northern goshawk, Brewer's sparrow (integral with the Migratory Bird section), Townsend's big-eared and big free-tailed bats, fringed myotis, white-tailed prairie dog, northern leopard frog, Great Basin spadefoot, flannelmouth, mountain, and bluehead suckers, roundtail chub, and Colorado River cutthroat trout (CRCT). The bald eagle was recently delisted, but similar levels of protection are afforded this species through the Eagle Protection Act. The CDOW has identified a number of non-game species that, by merit of population vulnerability, may warrant special management attention or concern. Those that inhabit the project area include the sagebrush vole.

Greater Sage-Grouse: On 5 March 2010, the U.S. Fish and Wildlife Service (USFWS) concluded that the greater sage-grouse warranted listing as an endangered species under the

Endangered Species Act, but that listing was precluded by the need to complete listing actions of higher priority. Range-wide, this species is considered a candidate for listing--a designation that affords management attention equivalent to that of species considered "sensitive" by the BLM. The BLM WRFO is a signatory partner with the CDOW, USFWS, and a broad-based group of local stakeholders in a sage-grouse conservation effort that culminated in the development of a conservation plan for the Parachute-Piceance-Roan (PPR) population of sage-grouse in 2008. The small and relatively isolated PPR population has mirrored national trends and has been in decline since at least the late 1970's. The PPR population is likely Colorado's most severely threatened population of greater sage-grouse owing to its very restricted and naturally fragmented habitat base, the advanced state of vegetation succession, and the concomitant threat of heavy natural gas development. Colorado's Statewide Greater Sage-Grouse Conservation Strategy required each of Colorado's population-specific work groups to prioritize perceived threats to their population of birds. The PPR workgroup ranked energy and mineral development as the primary risk factor facing these birds; the group considered ungulate grazing effects that were incompatible with the maintenance of adequate nest and brood cover as the next highest risk factor.

The analysis area encompasses about 25% of the overall range associated with the PPR greater sage-grouse population in the WRFO, as well as some peripheral areas along the White River associated with the more northerly Northwest Colorado population (Blair Mesa, Boise Creek). Consistently occupied habitat is confined to about 9000 acres in the southwest corner of the project area; much of the range north of Stake Springs Draw (i.e., upper/western Boxelder pasture) supports little sage-grouse activity at the present time. All shrubland habitats within identified overall range have supported sage-grouse use within the last 30 years and remain important for eventual reoccupation and recovery of the PPR population.

Suitable nest habitat in northwest Colorado is characterized by live sagebrush and mixed shrub cover with well-developed grass and forb understories of sufficient height and density to offer concealment for both nesting hens and young broods, especially prior to sustained flight (about five weeks post-hatch, ~late July). Deterioration of upland meadows and channel systems and premature depletion of broadleaf forage is considered a factor coequal with sagebrush conversion in contributing to declines in continental sage grouse populations. Optimal nest habitat consists of sagebrush stands with conformation that provides effective horizontal and vertical concealment. Understory herbaceous components, including grasses, complements horizontal nest concealment and improves microclimatic (e.g. temperature, humidity, wind) conditions at the nest site. There is evidence suggesting that both nest success and the survival of young broods is markedly enhanced by well developed herbaceous understories (e.g., big bunchgrass communities such as needle and thread) beneath and among sagebrush canopies. This is because bunchgrass species provide both vertical and horizontal structural components that are important to sage-grouse during the nesting and early brood-rearing periods. In contrast, bluegrass species, which are far more grazing tolerant, have a lower and less dense growth form which provides inferior hiding cover relative to bunchgrasses (Cagney 2010). Heavy herbivory not only reduces the availability of forbs and, perhaps, invertebrates as grouse forage, but aggravates soil moisture loss in the later part of the growing season, and typically prompts retreat of broods to light or moderately utilized ranges, if available. Throughout the year, but particularly during the reproductive period (April through August), sage-grouse are behaviorally relegated to the gently

sloping sagebrush and mixed brush communities at higher elevations in Piceance Basin--habitat that is generally confined to narrow ridgeline situations, and areas for which horses show mutual preference spring through fall.

Sage-grouse begin reproductive displays as early as March and begin nesting by the end of April. Most broods are complete by early-July and are fledged by mid-August.

Bald eagle: The White River corridor is the hub for seasonal bald eagle use of the White River valley. Particularly during the late fall and winter months, several dozens of bald eagles make regular foraging use of open upland communities south of the river, and are particularly common along its larger tributaries (e.g., Piceance Creek, Black Sulphur Creek). These foraging forays from nocturnal roosts along the White River are dispersed and opportunistic. Concentrated diurnal use and nocturnal roosting functions during the winter, and summer use attributable to a number of nest sites situated in river corridor's cottonwood stands, occur along the entire north edge of the project area.

Northern goshawk: The BLM has about six recent records of goshawk nesting in the Piceance Basin, including a number from the project area. Based on incidental observations of birds during the summer months, the birds are probably more common than the breeding records indicate. Based on the BLM's experience, goshawks nest at low density throughout the basin in mature pinyon-juniper woodlands (above 6500') and Douglas-fir stands. Goshawks establish breeding territories as early as March and begin nesting by the end of April. Nestlings are normally fledged and independent of the nest stand by mid-August. An influx of migrant goshawk appears to elevate densities in this Resource Area during the winter months.

Townsend's big-eared bat, big free-tailed bat, and fringed myotis: Although the distribution of these bats is poorly understood, recent acoustical surveys in the Piceance Basin and along the lower White River have documented the localized presence of Townsend's big-eared and big free-tailed bat along larger perennial waterways. These bats typically use caves, mines, bridges, and unoccupied buildings for night, nursery, and hibernation roosts, but in western Colorado, single or small groups of bats use rock crevices and tree cavities. Although rock outcrops and mature conifers suitable as temporary daytime roosts for small numbers of bats are widely available in the project area, and relatively extensive riparian communities are available along the White River and in the mainstem and larger tributaries of Douglas, Yellow, and Piceance Creek, there are no underground mines or known caves, and unoccupied buildings are extremely limited in the project area. Birthing and rearing of young for these bats occurs in May and June, and young are flighted by the end of July. The big free-tailed bat is not known to breed in Colorado.

White-tailed prairie dog: Lands showing evidence of past prairie dog occupation are confined to about 250 acres in the extreme northwest corner of the project area. Little of this habitat along Highway 64 is currently occupied. The White River separates these areas from extensive core areas north of the river (Coal Oil Basin), and although capable of being occupied by associates such as burrowing owl, it is unlikely that these small, isolated towns would offer an effective habitat base for individuals associated with northwest Colorado's experimental non-essential population of black-footed ferrets. Prairie dogs begin dormancy in the late summer to early fall

months and emerge from hibernation in March. Breeding occurs in March and April and young emerge from burrows in May.

Northern leopard frog and Great Basin spadefoot**:** Leopard frogs are locally common along the White River and portions of Yellow and Piceance Creeks, and are more sporadically distributed along Douglas and East Douglas Creek. Spadefoot toads are known recently from western Rio Blanco County and neighboring Uintah County, Utah and appear to be associated with ephemeral stock ponds in valley and basin terrain. There are scattered historical records of spadefoot from Powell Park (White River valley near Meeker, 1997) and a single record from Piceance Creek near Black Sulphur Creek (1973). Although probably rare and sporadically distributed, it remains possible that toads occupy shrublands and woodlands in close association with stock ponds and perennial streams distributed throughout the project area.

Brewer's sparrow: Brewer's sparrows are common and widely distributed in virtually all big sagebrush and mixed brush communities throughout the planning area. These birds are typically one of the most common members of these avian communities and breeding densities probably range between 10-40 pairs per 100 acres. Typical of most migratory passerines in this area, nesting activities normally take place between mid-May and mid-July. This species is addressed integral with the Migratory Bird section.

Sagebrush vole: The sagebrush vole occurs locally in sagebrush regions of the Great Basin and northern Great Plains. In Rio Blanco County, the sagebrush vole is associated with sagebrush and mixed shrub – perennial bunchgrass habitats from 6000-9000', which involves some 385,000 acres of BLM surface in the White River Resource Area. Oil shale baseline inventories in the mid-70s suggest that the vole is a widely distributed, but relatively uncommon component (1-2%) of this Resource Area's upland shrub small mammal community, occupying these habitats at minimum densities of about one per hectare. It is presumed that sagebrush voles are distributed throughout the HMA's upland sagebrush and mixed shrub communities with diverse and well-developed (e.g., native bunchgrass) understories. Voles are active throughout the winter months beneath the snowpack; sagebrush leaves and cambium being the primary constituents of their winter diet. The voles reproduce during the spring and early summer months; their diverse summer diet consisting of flowers and leaves of virtually all green plants including grasses, forbs, and shrubs.

Sensitive fish: There are a number of BLM-sensitive fish that inhabit waters within the analysis area. Flannelmouth and mountain sucker occur frequently in most of the larger perennial streams in the Piceance and Yellow Creek basins and inhabit the White River. Bluehead sucker and roundtail chub appear to be confined to the river. The East Douglas portion of the HMA includes a ¾-mile reach of lower Cathedral Creek near its confluence with East Douglas Creek. CRCT occupy all the major tributaries of upper East Douglas Creek, although habitat conditions for trout in East Douglas below Cathedral Creek likely begin to diminish (e.g., water temperature) and there is probably little permanent occupation below this confluence.

3.4.4 LIVESTOCK GRAZING

The BLM organizes the descriptions for grazing management into four allotments within this

analysis area: Yellow Creek, Square S – Pasture C, Cathedral Bluffs (Hogan and Tommy's Draw Pastures), and Greasewood Allotments which account for 166,888 public land acres within the HMA. There are currently 4 grazing permittees authorized to graze within the HMA. Tables 3-14 and 3-15 below show the livestock grazing season of use, livestock numbers and AUMs within the HMA. Livestock grazing is also permitted in areas immediately adjacent to the HMA, see Map 3-4 for Allotment and HMA boundaries.

Table 3-14. Grazing Allotments within the HMA.

Allotment	Acres*
Yellow Creek	63,191
Square S, Pasture C	18,126
Cathedral Bluffs	57,761
Greasewood	27,810
HMA Total	**166,888**

* BLM acres only.

Table 3-15. Authorized Livestock Use Within the HMA.

Allotment	Pasture	Livestock		Grazing Period		AUMs
		Number	Kind	Begin	End	
Piceance Portion						
Greasewood	All	410	Cattle	4/15	5/15	924
		272	Cattle	11/1	1/20	645
Yellow Creek	Rocky Ridge	100	Cattle	4/15	5/15	102
	Barcus-Pinto	240	Cattle	5/1	5/15	118
	Barcus-Pinto	340	Cattle	5/16	6/30	514
	Boxelder	414	Cattle	7/1	10/15	451
	Barcus-Pinto	340	Cattle	10/16	12/30	850
	Rocky Ridge	120	Cattle	1/1	1/31	122
Square S	Pasture C	500	Cattle	5/20	6/20	505
Cathedral Bluffs	Hogan Draw	550	Cattle	3/1	3/31	561
	Tommy's Draw	550	Cattle	4/1	4/30	504
	Tommy's Draw	50	Cattle	5/1	5/31	47
	Tommy's Draw	100	Cattle	11/15	11/30	49
	Hogan Draw	250	Cattle	12/1	12/30	247
	Tommy's Draw	250	Cattle	12/1	12/30	229
	Hogan Draw	550	Cattle	1/1	2/28	1067
HMA Total Authorized Livestock Use						6935

Tables 3-16a through 3-16d below show actual use by livestock within the HMA, and the levels of voluntary non-use by grazing permittees over the last four grazing years (3/1-2/28), within each of the four grazing allotments or portions of grazing allotments located in the HMA. Actual use data for livestock is collected through annual use data submitted by grazing permittees. Wild horse actual use is based on the 2010 inventory which 265 wild horses were counted inside the HMA, Table 3-17 below is a summary of total forage use within the HMA for the 2010 grazing year, March 1st 2010 to February 28th 2011. Wild horse actual use is calculated with 265 adult

wild horses for 10 months (3/1/2010-12/31/2010) and 318 adult wild horses for the remaining 2 months of the grazing year (1/1/2011-2/28/2011). The BLM Wild Horses and Burros Management Handbook (BLM Handbook H-4700-1) considers all wild horses and burros one year of age to be adults, and a foal is considered one year of age on January 1st of the year following its birth.

Table 3-16a: Actual Use Greasewood Allotment

Greasewood			
Year	Used	Authorized	% Of Authorized Used
2007	1569	1569	100%
2008	0	1569	0%
2009	492	1569	31%
2010	645	1569	41%
		Average	43%

Table 3-16b: Actual Use Yellow Creek Allotment

Yellow Creek			
Year	Used	Authorized	% Of Authorized Used
2007	1175	2157	54%
2008	1572	2157	73%
2009	1679	2157	78%
2010	1735	2157	80%
		Average	71%

Table 3-16c: Actual Use Pasture C of Square S Allotment

Square S pasture C			
Year	Used	Authorized	% Of Authorized Used
2007	322	505	64%
2008	505	505	100%
2009	568	505	112%
2010	453	505	90%
		Average	91%

Table 3-16d: Actual Use Cathedral Bluffs Allotment

Cathedral Bluffs (Hogan and Tommy's Draw Pastures)			
Year	Used	Authorized	% Of Authorized Used
2007	432	2704	16%
2008	1383	2704	51%
2009	1559	2704	58%
2010	1563	2704	58%
		Average	46%

Table 3-17. 2010 Actual Use Within HMA 3/1/2010-2/28/2011

	Authorized	AUMs Used	% Of Authorized Used
Yellow Creek	2157	1735	80%
Greasewood	1569	645	41%
Sq S Pasture C	505	453	90%
East Douglas	2704	1563	58%
Livestock Total	6935	4396	63%
Wild Horses	2568	3286	128%
Total	9503	7682	81%

As shown in the table above, livestock use within the HMA was 63% of the total authorized use, wild horse use was 128% of allocated forage, and the total use by livestock and wild horse's

accounts for 81% of allocated forage.

Table 3-18. Livestock Use within the HMA

	2007	2008	2009	2010
Greasewood	1569	0	492	645
Square S Pasture C	322	505	568	453
Yellow Creek	1175	1572	1679	1735
Cathedral Bluffs	432	1383	1559	1563
Total	3498	3460	4298	4396
Allocated	6935	6935	6935	6935
% of Allocated Used	50%	50%	62%	63%
Average	56%			

Table 3-18 above is a summary of total livestock use within the HMA, and the average use for the last four grazing years since the last wild horse gather in 2006. As shown in the table above, livestock use has averaged 56% of the total allocated forage. The voluntary reduction in livestock stocking rate within the HMA by permittees has slowed the transition away from TNEB. The 2539 AUMs of voluntarily non-use by livestock permittees in 2010 would support 211 Animal Units (AUs) for 12 months. Wild horses are allocated 2568 AUMs annually within the HMA or 214 AUs for 12 months. Considering the total available forage and non-use by the grazing permittees, forage was available for an additional 211 wild horses within the HMA, for a total of 425 wild horses. This is 107 adult wild horses above the population in spring 2011 (318). Based on this figure, the range was capable of supporting the livestock and excess wild horses, which occupied the HMA in 2010, because of the voluntary non-use by the grazing permittees.

There are also numerous range improvement projects located within the HMA which have been built in cooperation with livestock operators in order to improve distribution of livestock, as well as conditions of the range. These projects include water wells, reservoirs, vegetation treatments, water tanks, and spring developments. Much of the maintenance of these projects, especially water developments is performed by livestock operators. Maintenance includes such actions as repair or replacement of pumps or windmills on wells, cleaning of reservoirs, and repair of water tanks. The construction and maintenance of these improvements benefit livestock, wild horses, and wildlife.

Assessments for conformance with Rangeland Health Standards have been completed and are ongoing for the grazing allotments in the HMA. As assessments are updated, additional adjustments in livestock season of use, livestock numbers, wild horse numbers, and grazing systems may be made through the allotment evaluation process.

Based on historical analysis and Ecological Site Inventory Data collected within the HMA since 1996, the BLM assumed that the livestock and wild horse carrying capacity of the HMA is 9,503 AUMs; 6,935 AUMS for livestock under seasonal prescribed use, and 2,568 AUMs for wild horses based on yearlong use. Current use of 7,682 AUMs of forage; 4,396 by livestock, and 3,286 by wild horses, is indicating overuse of key species within some areas (Map 3-3) due to the wild horse population exceeding the AML. In order to affirm the carrying capacity of 9,503

AUMs and determine the appropriateness of the AML the BLM must manage and maintain the wild horse population within AML in conjunction with comprehensive rangeland monitoring.

3.4.5 WILD HORSES

Appropriate Management Level (AML) is defined as a population range within which wild horses can be managed in the long term. AML applies to the number of adult wild horses to be managed within the population and does not include current year's foals. The AML for the Piceance-East Douglas HMA was increased as a population range of 135 – 235 in 2002 through the NEPA decision making processes following an in-depth analysis of monitoring data collected over several years.

In 1996, through the WRRA Wild Horse Removal Plan EA #96-72, BLM analyzed a stocking rate of 450 AUMs to wild horses in Pasture C of the Square S Allotment for 30 wild horses and 1,275 AUMs to wild horses in the Yellow Creek Allotment for 85 wild horses. In the 2002 Piceance-East Douglas Wild Horse Herd Management Area EA and Gather Plan #WR-02-049, BLM analyzed a stocking rate of 258 AUMs to wild horses in the Tommy's Draw Pasture of the Cathedral Bluffs Allotment for 17 wild horses, 150 AUMs in the Hogan Draw Pasture of the Cathedral Bluffs Allotment for 10 wild horses, and 435 AUMs in the Greasewood Allotment for 29 wild horses. Wild horse AUMs were based on wild horses accounting for 1.25 AUs.

The 1997 WRRMP/ROD allocated 2,101 AUMs for the wild horses within the HMA, however, the above gather documents analyzed an increased stocking rate which allows for a maximum of 214 (2,568 AUMs) wild horses at season long grazing. The BLM's current AML of 135 – 235 is based upon this increased stocking rate. The June 2010 Wild Horse and Burro Management Handbook (H-4700-1) states that the upper limit of AML shall be established as the maximum number of wild horses which results in TNEB and avoids a deterioration of the range. Based on the H-4700-1, wild horses one year of age and older count as 1.0 AU.

In this HMA, wild horse population growth rates range between 16 – 24%. Population inventory flights have been conducted prior to environmental assessment work associated with previous gather operations. These population inventory flights have provided information pertaining to: population numbers, foaling rates, and distribution.

In an attempt to achieve and maintain AML the wild horses within the HMA have been gathered 13 times since 1980. Not all of the gather operations were conducted within the entire HMA but rather portions of the HMA in order to reach AML and obtain TNEB within those areas. In 2010, the BLM gathered and removed wild horses that were located outside of the HMA only. The two previous wild horse gathers averaged 200+ wild horses removed from within the HMA (2002 and 2006).

In 1980, the wild horse gather from the areas of Twin Buttes, Square S/Pasture C, Cathedral Bluffs, and Piceance Basin was considered an interim emergency action designed to halt range deterioration until a wild horse management plan could be written and implemented for the area. No gathers since that date have been classified as an emergency gather.

In 1993, the BLM designed and built the Yellow Creek Corrals (YCC) (Map 2-1) in conjunction with the livestock permittee within the Yellow Creek Allotment. This facility was constructed so that the WRFO would no longer need a long transport trip of the wild horses from the HMA to the BLM facilities in the Sand Wash Basin near Maybell, CO, and for those wild horses selected for return to the HMA that would be reloaded into trailers and transported back to the HMA which subjected them to additional stresses associated with the return trip. The YCC thereby reduced the stress to the wild horses simply by not having additional transportation and the number of times that BLM would have to handle them as well as personnel and safety benefits to the BLM. Because the YCCs were constructed with the aid of the livestock permittee, they are allowed to use the YCCs for gathering and shipping of cattle from within the Yellow Creek Allotment. This facility is further used when sorting wild horses and for those wild horses that are selected to be returned to the HMA. In some cases, the wild horses can be released directly from the YCC if they were gathered from near that area.

In 2001, captured wild horses being held within the YCC facility were observed during a gather operation by Mark J. Deesing, Animal Behavior Consultant with Grandin Livestock Handling Systems, Inc. The findings were written up in the April 2001, Western Horseman titled "*Handling Mustangs*". The article gave the YCCs an excellent rating for providing the BLMs ability to properly and humanly handle wild horses and that same level of care continues.

Wild Horse Herd Distribution: The HMA is comprised of six geographic regions (Map 3-5). These geographic regions correspond with areas of preferred habitat that form distinct home ranges. These distinct home ranges are terrain and vegetation driven and promote good distribution in the HMA. Wild horse movement in the HMA is apparent through trails and seasonal variation in distribution. However, some of the wild horse bands have home ranges and rarely venture beyond these ranges. WRFO recognizes the wild horse herd in the HMA is made up of a genetically diverse population. Additionally, these wild horses have the opportunity to interact with each other between home ranges and that interaction should ensure genetic variability. While the home ranges of all six groups overlap, particularly among wild horses using adjacent geographical regions, each geographic region hosts a herd with a unique habitat use pattern.

Listed below and described further are the six geographic home ranges within the HMA:

- The Greasewood wild horses' summer on Calamity Ridge at the head of Greasewood Creek and use the lower reaches and part of the Barcus-Pinto region in the winter, fall and spring.

- The Rocky Ridge wild horses' utilize a range centered on Black Mountain which includes lower Yellow Creek, Barcus Creek, and lower Greasewood. Their home range and preferred forage use area overlaps with that of the Barcus-Pinto horses principally in the Barcus and Yellow Creek drainages.

- The Barcus-Pinto wild horses' core distribution area is Pinto Mesa, the area between Barcus Creek and Pinto Gulch. This range extends over into Barcus Creek proper, which is used extensively for forage, particularly in the summer months. The lower reaches of

Barcus Creek are particularly vulnerable to overgrazing when wild horse numbers exceed AML. The horse's preference for Pinto Mesa is the result of a nearly ideal mixture of habitat features including thermal cover, large open foraging areas and proximity to reliable water sources. Pinto Mesa's prime habitat and central location within the Piceance Portion of the HMA, makes it the area with the most overlap among the geographic regions of the HMA. Wild horses from the Greasewood, Rocky Ridge, Barcus Pinto and Boxelder horses all use this area. At proper stocking levels, the area serves as valuable fall, winter and early spring range, but most wild horses leave the area for the growing season or generally from May to July. When numbers exceed the AML the summer range becomes limiting and bands from Greasewood, Rocky Ridge and Barcus-Pinto tend to remain in the area during the entire growing season.

- The Boxelder wild horses' home range includes a rectangular block of rangeland with prime summer habitat on the Cathedral Bluffs to the west and lower elevation habitat for the other seasons to the east. On 84 Mesa, at the east end of the region, the Boxelder horses overlap with the Barcus-Pinto horses. The key winter use in this area is the south exposures of Dry Gulch and, to a lesser extent, the south slope of Corral Gulch below its junction with Water Gulch. The horse's summer use area features the upper reaches of Boxelder and Corral Gulch on the Cathedral Bluffs, due to the favorable mix of water and foraging habitat. The key summer forage habitats are the dry exposure and loamy slope range sites. On Cathedral Bluffs the Boxelder horses intermingle with the wild horses from the Square S, Pasture C, and wild horses from the East Douglas portion of the HMA.

- The Square S, Pasture C wild horses' home range coincides with a pasture in the Square S grazing allotment that is fenced on three sides. The Pasture C horses winter on the south slopes along the lower reaches of Stake Springs. When the snow melts, the bands move south and west to the upper elevation ridges to preferred foraging habitat on the Cathedral Bluffs. The ridgetop grasslands that are their primary habitat are the Dry Exposure and Loamy Slopes range sites. Pasture C wild horses sometimes move west into the East Douglas portion of the HMA. Gates on the fenceline between Pasture C and the Boxelder Region are left open when not needed for livestock management, so the Boxelder and Pasture C wild horses interchange frequently.

- The East Douglas wild horses focus on the rugged west face of the Cathedral Bluffs. Some of these wild horses summer on the top of the Cathedral Bluffs in the vicinity of Tommy's Draw, where they overlap with the Boxelder and Square S, Pasture C horses. The WRFO's 2010 inventory found nine (9) wild horses within the boundaries of the East Douglas portion of the HMA. The BLM inventoried an additional 29 wild horses located just south of the HMA boundary within the Cathedral Creek pasture of the Cathedral Bluffs allotment. The BLM believes these wild horses to be part of the East Douglas band because of the lack of a boundary fence for this section of the HMA, bringing the total number in this home range to 38 wild horses.

Table 3-19. Inventoried Locations of Wild Horses and Post Gather Population by Geographic Region.

AREA	2010 INVENTORY DATA	PROJECTED POPULATION AUGUST 2011	PROPOSED # WILD HORSES TO REMOVE	PROPOSED POST GATHER POPULATION
East Douglas	9[1]	14[1]	0	25[1]
Greasewood/Barcus/Pinto	138	199	156	30
Rocky Ridge	17[2]	24[2]	0	25[2]
Boxelder	55	79	50	30
Square S, Pasture C	46	66	41	25
Total - Inside HMA	**265**	**382**	**247**	**135**
Area Outside HMA	59	35	35	0
North Piceance HA	49	35	35	0
Magnolia Bench	7[3]	8[3]	8[3]	0[3]
Total - Outside HMA	**115**	**78**	**78**	**0**
TOTALS	**380**	**460**	**325**	**135**

[1]Inventory shows 9 head of wild horses counted inside the HMA while 29 wild horses were counted just outside the HMA boundary but still on the East Douglas side of the range so that inventory data is included in the East Douglas geographic region and not in the adjoining allotments. The 29 wild horses are part of the count for outside of the HMA.

[2]WRFO believes that it was possible that a band of seven wild horses were missed during the inventory due to various previous viewings of that band. The Rocky Ridge geographic area wild horse inventory could be more along the numbers of 29 wild horses.

[3]WRFO knew of 7 wild horses remaining on the Magnolia Bench area at the conclusion of the 2010 gather (1 band of 6 and 1 isolated wild horse).

During the 2010 gather operation, 9 wild horses were gathered and removed from the Magnolia Bench area however, the BLM was unable to capture all of the wild horses known to be in this area. Those wild horses not gathered in this area were as follows: Two (2) bands consisting of seven wild horses as follows: Band 1 with 3 mares, 2 foals, and 1 stud; and Band 2 with a single stud wild horse. Therefore, it is known at this time that after the 2010 gather operation at least 7 wild horses remain in the Magnolia Bench area. With a 20% increase, that number will reach 8 wild horses for 2011 and potentially 10 wild horses by 2012. During the 2010 Inventory only 9 wild horses were counted for this area which is considered an under count of 44%.

Herd Genetics and Population History: Beginning in 1996, the WRFO had started returning wild horses to the HMA by the selective removal process. The wild horses were gathered and while in temporary holding were sorted and selected for return to the HMA based generally on their confirmation, age, and in some cases based additionally on their color and their herd hierarchy (i.e. lead mare or band stallion). The WRFO believes that the wild horses previously selected and returned to the HMA in the past have contributed to the overall balance of genetics within the Piceance-East Douglas herd. Wild horses in the Piceance-East Douglas herd possess balanced conformation and somewhat refined features. The typical wild horses from within the HMA stands between 14.2 and 15 hands and weigh between 800 and 1,000 lbs.

Blood samples have been collected over the years from wild horses previously gathered and/or removed from various locations within and outside of the HMA for genetic baseline data (e.g. genetic diversity, historical origins of the herd, unique markers) with written reports from Dr. Cothran dated January 27, 1993, August 23, 1995, September 30, 2003, and June 1, 2010. The

samples were analyzed by Dr. E. Gus Cothran, with Equine Genetics Laboratory, Texas A&M University. Refer to the HMA web page for copies of the full reports (http://www.blm.gov/co/st/en/fo/wrfo/piceance_-_east_douglas.html).

In 1995, E. Gus Cothran, the Director of the Equine Blood Typing Research Laboratory at the University of Kentucky (now with Texas A&M University), evaluated the genetic makeup of the Piceance-East Douglas herd. Cothran's report stated, in part: "The primary conclusions from the analysis of genetic variability of the [WRRA] horse herd are that significant genetic subdivision of the herd exists and that, in general, genetic variation within subdivisions is relatively low. Within the HMA genetic diversity is fairly high. From a management standpoint, this is an almost ideal situation. Population subdivision with limited inbreeding within subdivisions and occasional exchange of individuals among subdivisions is one of the best strategies for the long term maintenance of genetic variability. The subdivision of the HMA population with levels of dispersal that now appear to exist should be sufficient to maintain genetic variation within the area for many generations even if relatively small numbers are maintained within subdivisions. If additional interchange of individuals appears to be needed in the future, transfer of one or two year old females every three to five years would be the most efficient strategy."

Genetic sampling was also conducted during the 2002 gather, when 30 samples were submitted for analysis from the Barcus Creek, 84 Mesa, and Spring Creek areas. The report states: "Overall, little has changed since 1995. . . . The population subdivision exhibited in the WRRA is a good way to maintain variation in the long term. Allelic diversity appears to be as high as or higher than 10 years ago which is likely due to the subdivision with limited migration among groups."

The report further states: "This herd [management] area should be closely monitored. Variation levels are low overall and are below presumed critical levels for some herds. . . . Also, because all subpopulations appear to have a common origin, the subdivision with occasional migration will not completely eliminate the threat of inbreeding. This herd should be watched for possible evidence of inbreeding depression such as common physical defects or low reproduction. If such evidence is observed, importation of wild horses from another HMA should be considered. The Little Bookcliffs area would be a good source of wild horses."

During the 2006 gather, genetic samples from 32 wild horses were collected, this time specifically from those wild horses gathered from the East Douglas portion of the HMA. The report states: "Genetic variability of this herd is somewhat low but not yet at a critical level to cause concern. . . . Current variability levels warrant monitoring of this population. Although variation levels are not yet at a critical level the risk of additional loss of diversity exists in part due to small population size. If population size cannot be increased an introduction of wild horses from another area may need to be considered."

Cothran's studies determined the herd shows the closest similarity to the North American breeds, as well as to the Thoroughbred, Arabian and draft horse groups. The Piceance-East Douglas wild horse herd has the closest relationship to Colorado's Little Book Cliffs wild horse herd.

Bands or herds which experience some degree of isolation tend to lose genetic information through genetic drift [genetic drift: a change in the gene pool of a small population that takes place strictly by chance. Genetic drift can result in genetic traits being lost from a population or becoming widespread in a population without respect to the survival or reproductive value of the alleles involved. A random statistical effect, genetic drift can occur only in small, isolated populations in which the gene pool is small enough that chance events can change its makeup substantially. In larger populations, any specific allele is carried by so many individuals that it is almost certain to be transmitted by some of them unless it is biologically unfavorable.] The loss of genetic material has a negative impact on the genetic composition of a herd. According to the Cothran's data, at this time, there is some evidence to indicate that the HMA may have low variations, however, he also states that … "Different relative levels of variation in the different measures shows that sample size probably is a consideration in the values." And further, that … "however, if the entire WRRA is considered, the number is above average for a feral population." Since bands are able to mix with other bands within the HMA, it is likely that there is exchange of genetic materials across bands.

Genetic similarity values indicate that this herd is primarily derived from North American horse breeds. Further, there is evidence of Spanish ancestry, however, only a small number of horses carry markers indicative of Spanish ancestry, and, two individual horses had clear cut Spanish markers not found in the gaited North American breeds. The North American riding horse breeds are abundant throughout North America and the alleles are well represented in these breeds.

Within the analysis area, the BLM has observed wild horses with enlarged knees, which impair the affected animal's ability of movement. No genetic study has been conducted which would aid in determining whether this condition is a result of genetics or the environment.

Current Population: In 2010, the WRFO conducted an inventory between February 2 and March 17 of the HMA and areas outside the HMA. The summary of this report is as follows: 46.3 hours of flight time logged, approximately 534,272 acres were inventoried. A copy of the full inventory report is available upon request. A population inventory was completed in February/March 2010, refer to map 3-6 for the locations of those wild horses observed during the inventory. This inventory counted 265 wild horses within the HMA and 115 wild horses outside of the HMA.

Using the population of 265 wild horses in 2010 within the HMA and an expected foal crop of 20% for both of the years of 2010 and 2011, the number of wild horses at the time of the proposed gather could be approximately 382 within the HMA boundaries. Using the population of 65 (post 2010 gather) wild horses outside of the HMA and an expected foal crop of 20%, the number of wild horses at the time of the proposed gather could be approximately 78. Wild horses have been observed since the 2010 inventory outside of the HMA in additional locations from those of the 2010 inventory.

The BLM bases their wild horse and burro population estimates on direct counts from either a helicopter or a fixed-wing airplane. Updated research by Lubow and Ransom (2009) found an undercount bias as large as 32% before making any statistical corrections. The estimates listed

above do not add an undercount "correction" factor to the estimated wild horse population within the HMA however, WRFO believes that the inventory of wild horses within the HMA have been consistently undercounted but existing data indicates that inventories we have been reasonably accurate over the years.

Inventory History: The first census of this herd was completed in 1974 with 139 wild horses recorded during the observation flight. Since 1974, herd population has been recorded during census as high as 467 wild horses in 1997, and as low as 93 wild horses in 1985 (probable mortality resulting from severe winter weather conditions). The following table shows the population history in the HMA determined through census and expected herd recruitment.

Table 3-20 presents the best available information relating to wild horse population data in the herd management area. The table shows the horse population compounded at 20%, and adjusted by the 13 inventories conducted in the HMA since the passage of the WRFHBA.

Table 3-20. Previous inventories and wild horses removed during previous gathers (HMA only).

Year	Pre - Foal Population	Post - Foal Population	# Horses Removed	Expected Population given a 20% Population Increase since the Last Inventory (less horses removed)	Percent of Expected Actually Observed in the Inventory
1974	139	167			
1975	167	200			
1976	200	240			
1977	240	288			
1978	288	346			
1979	283	340		346	82%
1980	194	233	133	340	57%
1981	225	270	185	100	225%
1982	207	248		85	244%
1983	248	298	54		
1984	244	293	10		
1985	93	112	7	283	33%
1986	105	126			
1987	126	151			
1988	151	181			
1989	181	217	15		
1990	202	242			
1991	272	326	21	242	112%
1992	305	366	72		
1993	294	353	58		
1994	295	354	23		
1995	366	439		331	110%

1996	439	527	239		
1997	286	343	135	288	99%
1998	208	250			
1999	242	290	92	250	97%
2000	198	238			
2001	238	286			
2002	294	353	151	286	103%
2003	202	242			
2004	242	291			
2005	291	349			
2006	363	436	212	349	104%
2007	224	268			
2008	268	322			
2009	322	386			
2010	265	318		386	69%
2011	318	382			
Total Horses Removed:			1,407		

=> Inventory Year HMA

Snow cover enhances an observer's ability to see horses, so inventories are conducted in the winter. However, in any conditions wild horse inventory in the region is difficult because of rough terrain and the Pinyon Juniper vegetation type. The BLM considers the 20% figure the most common annual increase and accounts for naturally occurring population losses (i.e. normal death loss, old age, starvation, and predation). If 100 horses are observed in an inventory, 120 horses would be expected the following year. However, the two right hand columns indicate that the "expected" number of horses is not always found on a subsequent inventory. For example in 1982, 207 horses were observed in the HMA inventory. Compounded at 20%, less the 64 head gathered in 1983 and 1984, 283 horses were expected in the 1985 inventory. The table shows that only 93 were found - which is only 33% of expected. Both 1983 and 1984 were deep snow years, so death loss is a distinct possibility. This theory is supported by data from West Douglas Herd Area where only 41 percent of the expected number of horses were found in the 1986 inventory.

Consequently, while the BLM utilizes a 20% increase, as it appears to be the most common in any one year, the Table 3-21 indicates that the herd populations do not average that figure due to a variety of factors including sever winter events and drought. The table shows that the original inventory total of 139 horses compounded at 16.16712% since 1974 (less the 1,407 horses known to be removed during the period) produces the population of 265 found in the 2010 inventory. Because wild horses are hard to count and they are known to move in and out of the HMA, any one inventory may be problematic. Table 3-20 and Table 3-21 offer a reliable picture of population trend, over time, within the HMA.

Table 3-21. Piceance - East Douglas HMA Unadjusted by Population Inventory Data @ 16.16712% Population Growth since 1974.

Year	Pre - Foal Population	Post – Foal Population	# Horses Removed	Year	Pre - Foal Population	Post – Foal Population	# Horses Removed
1974	139	162		1993	365	426	58
1975	162	189		1994	368	429	23
1976	189	221		1995	406	474	
1977	221	258		1996	474	553	239
1978	258	301		1997	314	367	135
1979	301	351		1998	232	271	
1980	351	410	133	1999	271	316	92
1981	277	323	185	2000	224	261	
1982	138	161		2001	261	305	
1983	161	188	54	2002	305	356	151
1984	134	157	10	2003	205	239	
1985	147	171	7	2004	239	279	
1986	164	192		2005	279	326	
1987	192	224		2006	326	380	212
1988	224	261		2007	168	196	
1989	261	305	15	2008	196	229	
1990	290	339		2009	229	267	
1991	339	395	21	2010	267	312	
1992	374	437	72	2011*	312	362	

* The 2011 population calculation in this table is based upon a 16.17% population growth from the inventoried 2010 population.

It should be noted that since the establishment of the AML in 2002, the estimated population in the HMA at the conclusion of the gather operations in 2002 (202 wild horses) and 2006 (224 wild horses) has been above 200 wild horses or what would be considered the high end of AML. In general, the population has been hovering around the high end of AML or 235 wild horses due to the fact that not all of the wild horses are able to be gathered, and because WRFO also believed firmly in returning selected individual wild horses back to the range within the HMA for herd genetics and health. Additionally, BLM policy regulated removal, based on age, of wild horses at various intervals (i.e. Washington Office Instruction Memorandums #s 98-17, 99-053, 2002-095, and 2005-206).

During the 2006 gather operation, 41 wild horses were released back into the HMA, of which 28 were wild horse mares treated with PZP, (the two-year contraceptive vaccine) and freeze branded with a CL on the left hip. In March 2008, the BLM attempted to inventory these mares, as well as check the condition of the wild horses in the HMA due to reports of wild horses in poor condition in the Sandwash Basin HMA (which the BLM determined to be unfounded). The BLM was unable to fly at low enough levels to distinguish between mares that had been treated and freeze branded from those that had not been treated unless the mare was naturally distinctively marked and easily recognized by the individual conducting the inventory. Due to the size and varied areas of the HMA, and relatively small number of treated mares, the

efficiency of the PZP treatment was unable to be confirmed at the estimated effective rates (based on rates for fall treatment (July to October) or year 1 at 80%, year 2 at 65%, and year 3 at 50%).

Herd Age, Sex and Color Ratio: Herd age and sex data collected during 8 gathers between 1980 and 2006 were compared to determine any notable changes in age, sex or color structure within the herd over a 26 year time span (Table 3-22).

Table 3-22. Age Distribution Percent by Gather Year

AGE	GATHER YEAR							
	1980	**1983**	**1994**	**1996**	**1997**	**1999**	**2002**	**2006**
Foals	23	21	20	23	23	21	21	23
1	20	2	2	8	5	1	13	19
2	11	12	7	20	7	14	13	10
3	7	23	34	11	9	12	8	9
4	8	2	11	4	9	5	5	5
5	3	3	0	3	3	4	3	5
6	3	11	0	5	5	3	3	2
7	5	5	7	4	6	4	5	3
8	3	8	5	5	5	10	5	2
9	3	2	1	1	5	2	5	1
10	2	2	3	*	2	1	2	3
11	2	3	4	*	3	2	6	3
12	4	3	5	*	3	1	5	3
13	5	3	0	*	2	3	0	0
14	1	1	0	*	2	1	0	0
15	1	3	1	*	3	5	3	1
16	0	0	0	*	1	0	1	0
17	0	0	0	*	1	0	0	2
18	0	0	0	*	2	0	1	2
19	0	0	0	*	1	1	0	0
20	0	0	0	*	2	2	1	0
+20	1	0	0	*	2	2	0	4
Total	102	104	100	84	101	94	100	97

*Note that in 1996 of the 87 head of wild horses returned to the HMA 77 of the wild horses were 10+ years but each individual horse's specific age was not identified for the records.
These numbers are based on the wild horses gathered not the overall number of wild horses in the HMA.

A typical age structure for wild ungulates (which includes wild horses) is pyramid in shape with the majority of wild horses included in the youngest age categories. A comparison of herd age structure based on eight gathers between 1980 and 2006 suggest that the Piceance-East Douglas herd retains a sound, varied age structure with the majority of wild horses within the younger age classes.

The herd's foal crop fluctuates between 16% and 24% of the population but the average is more along the lines of 21.875% of the herd. (Note: The foal crop figure does not conflict with the 16.16712% population increase figure presented earlier, because the later number includes death loss at all ages.) The one discrepancy in the herd's age structure is seen in the yearling age class. In 1980, 20% of the wild horses gathered were recorded as yearlings. This percent drops notably in the next 5 gathers, ranging between 1% and 5%, however it rebounds in 2002. Human error

may have resulted in the aging of wild horses since figures support an average population increase of 20%. Garrott (1990), in his doctorate paper on the demography of wild horses completed in 1990, analyzed 60,116 aging samples and found a frequent misclassification of yearling wild horses as two-year olds. The error was due to wild horses being classified as two-year olds because the incisors had fully erupted. Even though a sizeable number of yearlings have erupted incisors they are not in contact, thus the discrepancy. The possibility of human error accounting for the low number of yearlings recorded in these gathers is supported by comparing the number of yearlings recorded in 1994 (2%) with the number of four-year old wild horses gathered in 1997 (9%).

The proportion of older (over 10 years of age) wild horses increased somewhat between 1997 and 1999. This increase is likely the result of the program's age selective gather policy that went into effect in 1994 and resulted in older wild horses being returned to the range. To date, age gather operations do not appear to have negatively affected the Piceance-East Douglas herd's age structure; the herd remains primarily composed of wild horses less than 10 years of age.

The herd's adult sex ratio appears to favor females over males. Females meet or exceed 50% of the gathered population in 5 of the 8 years of data collection. The reason for a higher proportion of adult females in the herd is most likely the result of human manipulation as well as natural selection. To date, male wild horses have been favored for removal by the BLM during removal projects possibly due to public demand for wild horses leaning towards the male rather than the females. However, some of the public welcomed the fact that most mares were pregnant at the time of adoption or could be impregnated with a sire of their choosing. Research suggests that natural selection in wild horse herds favors females over males. Garrott (1990) concluded "foal sex ratios tend to be close to parity while there is a trend towards a preponderance of females in the adult segment of the populations. The tendency toward a skewed adult sex ratio [towards females] therefore is not the result of a skewed ratio at birth but reflects either a disparity in survival rates between males and females or differential probability of capture." To date, while the Piceance-East Douglas herd sex ratio appears to favor females, the ratio does not notably lean towards one sex over another. Variations can likely be attributed to normal fluctuations. Because of this imbalance, the BLM believes that a shift in the sex ratio to favor studs could reduce the rate of population increases. The records show a filly:colt ratio of 50:50 during two of the eight gathers (Table 3-23). The remaining gathers suggest a normal fluctuation in the filly:colt ratio with fillies varying between 40% and 60% of those foals gathered.

Table 3-23. Sex ratio data collected during 8 previous gathers.

YEAR	FILLY %	COLT %	MARE %	STUD %
1980	50	50	53	47
1983	50	50	47	53
1985	40	60	52	48
1996	59	41	61	39
1997	47	53	50	50
1999	56	44	54	46
2002	45	55	58	42
2006	53	47	56	44

Herd color composition data collected during gathers between 1980 and 2006 were compared to

determine any notable changes in color structure within the herd over a 26 year time span.

Table 3-24. HMA Color Composition by Gather Year

Color	Gather Year						
	% 1980	% 1983	% 1994	% 1997	% 1999	% 2002	% 2006
Bay	19	25	60	52	18	33	43
Gray	10	11	15	10	25	26	12
Red Roan	9	1	0	0	5	2	2
Sorrel	23	15	4	9	10	10	15
Blue Roan	5	3	0	0	1	0.5	1
Brown	10	13	7	5	16	11	9
Black	14	19	10	23	23	8	13
Pinto	1	2	1	1	0	1	1
White	0	0	0	0	0	0	0
Buckskin	3	3	1	0	0	4	0
Palomino	2	3	0	0	0	0.5	0
Chestnut	5	1	1	0	0	3	0
Cremello	0	0	0	0	0	1	0

As evidenced from Table 3-24 above, diversity in herd color does not appear to have changed appreciably between 1980 and 2006. Rarer colors (pinto, buckskin, palomino and chestnut) accounted for a combined 16% of the wild horses gathered in 1980; 11% in 1983; and 5% in 1994. These colors were as rare or absent in 1997 and in 1999. The decrease in herd color variation is most likely partially attributable to human manipulation and partially due to unknown internal factors. The bay and gray colors of wild horses possess a range of color diversity and these colors have increased in the herd. Preserving what color is left in this herd and possibly reintroducing infrequent colors back into the herd would preserve the existing herd color variation over time. Uniquely colored wild horses stand out and serve as 'markers' during monitoring and gather projects.

Natural Population Controls: Throughout the HMA few predators exist to control wild horse populations. Death loss is approximately 4% from all causes, and rarely observed in any one year. Normally death loss is negligible, however as indicated in Table 3-21 above, death loss can occur within a given year as observed in the 1981 and 82, which the BLM has attributed severe winter conditions during those years.

There are no indications that wild horse recruitment in the HMA is influenced by mountain lion predation and any influences are accounted for with 20% annual growth rates. Throughout western North America, mountain lions preferentially select big game, especially mule deer, as prey, and in the presence of alternative big game prey, horses are typically avoided (Knopff and Boyce, 2007, Knopff et al., 2010). Lion predation of young foals has been demonstrated to limit horse population recruitment (Turner and Morrison, 2001), but this circumstance involved a resident lion population (average 4-5 adult male and female lions) exhibiting strong seasonal specialization on foals (93% of horse predation April through June) from a 150-horse herd in the absence of an alternate prey base.

The Colorado Division of Wildlife (CDOW) employs a suppression strategy for mountain lion management in Data Analysis Unit L-7 that is designed to maintain populations that can sustain

annual sporting harvest while maintaining low game damage levels and near-zero human conflict levels (Mountain Lion Data Analysis Unit L-7 Management Plan, CDOW 2004). Comprehensive monitoring of hunting and non-hunting lion mortality provides demographic data (i.e., age, sex) that forms the basis for timely determination of population status and allowing responsive adjustments to harvest objectives. CDOW believes that Game Management Units 21 and 22 continue to support relatively high densities of mountain lion (estimated ~10 per 100 square miles), which is supported by this population's demonstrated resilience in sustaining consistent rates of harvest with no strong demographic shifts over the past 5 years.

Given that the Piceance-East Douglas horse herd has demonstrated consistently high recruitment over the last several decades, there is little evidence to suggest that the lion populations in GMU 21 or 22 have exerted notable influences on foal survival over that timeframe. Since there is no reason to suspect that the adult lion population in these GMUs are incapable of suppressing wild horse recruitment, under the current circumstances (e.g., adequate sources of primary prey, incidental selection of horses as prey), there appears to be no reasonable likelihood that predation by lions can be relied upon to effect population-level suppression of future herd growth in horses.

Coyote are not prone to prey on wild horses unless young, and/or extremely weak. Other predators such as wolves do not exist in the area.

Existing Human Activities: Oil and gas development on approximately 292 well pad locations, or approximately 311 wells, has occurred since around the 1950's within the HMA. The East Douglas portion of the HMA saw the most development around the 1960's where approximately 60% of the well pad locations are located. Another 10% of the well pad locations are in the north eastern portion of the area known as Rocky Ridge, occurring around 1955. The remaining 30% of the oil and gas development, and most of the activity within the last 5 to 10 years has occurred within the interior of the HMA on approximately 84 well pad locations. Potential disturbance is estimated at approximately 10 acres per well pad for a total of 2,920 acres. The well locations and associated oil and gas facilities are in various stages of development (i.e. drilling, interim reclamation, and final abandonment). The BLM obtained this information from the Colorado Oil and Gas Conservation Commission (COGCC) website dated October 4, 2010 (http://cogcc.state.co.us/). Surface stipulations applicable to all surface disturbing activities were included for wild horses and can be found on page A-23 in the WRRMP/ROD.

Energy exploration/development has increased vehicle use of the existing transportation infrastructure within the HMA especially for the numbers of large trucks. The potential for wild horse vehicle collisions has always existed from the various users in the area; however this has increased the number of vehicle collisions with wild horses located inside as well as outside of the HMA. For 2010, two wild horses were killed by vehicle/horse collisions; 1 inside and 1 outside of the HMA. The last time a wild horse was hit by a vehicle was in 2007 on State Highway 64 at approximately Mile Marker 47. In addition, other wild horse mortality has resulted from accidental shootings that are investigated by BLM law enforcement and are usually associated with a big game hunting season, however, the BLM believes that not all shooting incidents are readily reported by the public possibly due to any potential for legal action against that individual.

In general, observations indicate that wild horses adjust quickly to activities associated with such development, so much so that they frequent well pads to rest or find water to drink after a rain or snow events. BLM has photographs of bands of wild horses napping on well pads amide a busy day of industry work and traffic. To date, the BLM has received no resent notifications of foals being separated from their band or foal deaths due to the current level of energy exploration/development activities; therefore, the BLM believes that these activities have not resulted in a higher occurrence of foal displacement or loss.

Oil Shale activities since the 1950's have disturbed approximately 230 acres of lands within the HMA (130 acres private/100 acres public). These public/private lands are in varied stages of reclamation with those acres unknown at this time. Additionally, in the 1990s Shell Frontier Oil and Gas Inc.'s Mahogany Project fenced an approximately 200 acre block of their private lands within the HMA near the Cathedral Bluffs, closing off access to these acres by livestock, and wild horses however the animals can walk around the fence to the rest of the areas.

Shell Frontier Oil and Gas Inc., Exxon Mobil Corporation and a few other private individuals own an approximate 19,000 acre block of land. The BLM recently learned that Shell Frontier Oil and Gas Inc., in 2008, placed a four strand barbed wire fence in a portion of the HMA (Section 36, T1S, R100W; Section 6, T2S, R99W; and Section 7, T2S, R99W), on their private lands, due to a conflict with the livestock operator in the area. However, the conflict has since been resolved and this fence also includes three separate 100 foot gaps in the construction to allow wild horses passage through the fence.

The BLM entered into several agreements with a private land owner, for the area added to the HMA known as the Greasewood allotment, to allow wild horse use of perennial water sources located on private property. However, those agreements could be jeopardized if wild horse populations continue to be managed above AML.

3.4.6 CULTURAL RESOURCES AND PALEONTOLOGY

Cultural Resources

The Piceance Basin, in general, is known to contain a wide variety of prehistoric and historic cultural resources. Numerous inventories have been conducted in the area, covering a large portion of the eastern part of the Piceance East Douglas HMA and numerous sites have been recorded. The western portion of the HMA has received significantly less survey coverage, yet contains many recorded sites including Canyon Pintado, a historic district listed on the National Register of Historic Places.

Within the boundaries of the Piceance East Douglas HMA there are currently 461 recorded prehistoric and historic sites, one district, and 386 isolated finds. Prehistoric sites include but are not limited to, open lithic scatters, open campsites, sheltered architectural sites, and wickiup villages. Prehistoric sites in this area commonly contain projectile points, scraping and cutting tools, hammerstones, tool manufacture flake debris, manos and metates, and less common pottery and items like cordage that were made of perishable materials. Such sites seem to be

particularly concentrated on the ridges overlooking the various tributaries to Yellow Creek, particularly where the pinyon-juniper and sagebrush vegetation communities come together. Recent inventory data suggests that site densities tend to be very high throughout the area. Wild horse traps, both protohistoric and historic seem to be concentrated on ridges in the pinyon-juniper vegetation communities where the traps can be camouflaged.

Historic resources are primarily related to early ranching and livestock grazing and are concentrated along the more moist drainage bottoms. Sites include, but are not limited to, homesteads, line shacks, corrals, pasture fences, sheepherder campsites, irrigation ditches, and wagon roads. Artifacts at these sites commonly include tin cans, glass, ceramic, wire, nails, wood and other metal objects. It appears that site density is lower at elevations above 7,500 feet above sea level, and in some of the narrower canyons and drainages resulting in fewer impacts to cultural resources in those areas. Artifacts and features themselves are but one component of archaeological research. The relationship of the artifacts and features to one another, their location on the landscape and their location within the soil matrix are critical to interpretation of the remnants of these once living cultures.

Paleontological Resources

The area of the Piceance Basin consists primarily of horizontal planes and near vertical outcrops of the Uinta Formation of Eocene age. The area is known to produce fossils of large mammals, particularly herbivores such as *Titanotherium, Uintatherium* and an extinct species of horse. Smaller species may also be present but are poorly reported. The area has also produced vegetation fossils including some of the most easterly known, well preserved samples of *Araucaria* in addition to various bits of petrified wood and various leaf impressions. Well preserved samples of palm, a type of willow and sycamore have also been reported from the area. Other invertebrates that have been recently reported from the shale fingers in the formation include a variety of insect fossils previously unreported from the area.

3.4.7 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The analysis area contains nine ACECs, including Coal Draw, Duck Creek, Dudley Bluffs, South Cathedral Bluffs, East Douglas Creek/Soldier Creek, Upper Greasewood, Lower Greasewood, Yanks Gulch, and Ryan Gulch ACECs (Map 1-3). Coal Draw ACEC was designated for the unique paleontological resources contained within its boundary. The Duck Creek ACEC was designated for primary management of the threatened and endangered plant species (Dudley Bluffs Bladderpod), as well as for containing unique cultural resources. The Dudley Bluffs ACEC was designated for primary management of the threatened and endangered plant species (the Dudley Bluffs bladderpod and Dudley Bluffs Twinpod), and remnant vegetation associations. The South Cathedral Bluffs ACEC was designated for primary management of three rare plants that are on BLM's sensitive species list (the Piceance bladderpod, the Utah gentian and the sun-loving meadowrue). The Upper Greasewood ACEC was designated for primary management of one BLM sensitive plant (the Piceance bladderpod) and several remnant plant communities. The Lower Greasewood ACEC was designated for primary management of one BLM sensitive plant (the narrow-stem Gilia) and remnant pinyon/juniper woodland. The Yanks Gulch ACEC was designated for primary management of

threatened and endangered species (the Dudley Bluffs Twinpod), and remnant vegetation area. The Ryan Gulch ACEC was designated for primary management of the threatened and endangered species (the Dudley Bluffs bladderpod and Dudley Bluffs Twinpod).

3.4.8 RECREATION

The proposed action would occur within the White River Extensive Recreation Management Area (ERMA). The BLM manages the ERMA as custodial, providing for unstructured recreation activities such as hunting, dispersed camping, hiking, wild horse viewing, horseback riding, wildlife viewing and off-highway vehicle use.

The HMA is within the northwestern corner of Colorado Division of Wildlife (CDOW) Game Management Unit (GMU) 22 as well as the northeast corner of GMU 21. Both GMUs are heavily used by public land hunters during the fall mule deer and elk big game hunting season. GMU 21 is a trophy Mule Deer hunting unit but still open to other upland big game hunting from the end of August to the middle of November. GMU 22 has public land hunting beginning the end of August to the end of December.

3.4.9 NOISE

Loud noise may reduce a person's opportunity to enjoy solitude. There are several areas within the HMA which provide solitude. Noise disturbance can annoy people to differing degrees depending on their expectations, attitudes towards activities, magnitude and duration of the noise, the activity they are pursuing, and the time of day. Table 3-25 provides typical noise levels for familiar indoor and outdoor sources, measured in decibels (dBA).

The EPA established a noise level of 55 dBA as a guideline for acceptable environmental noise (EPA 1974). This established noise level provides a basis for evaluating noise effects when no other local, county, or state standard exists. Impacts from noise levels increase in areas where sensitive receptors exist (i.e. where people are exposed to an average noise level over a specific period). In this context, public health and welfare includes personal comfort and well-being, and the absence of mental anguish, disturbances, and annoyance as well as the absence of clinical symptoms such as hearing loss or demonstrable physiological injury. Therefore, the reader should not misconstrue the 55 dBA noise level as a regulatory goal. Rather, recognize the 55 dBA noise level as a level below which there is no reason to suspect that the public health and welfare of the general population would be at risk from any of the identified effects of noise. A noise level of 60 dBA generated during the normal conversation of two people five feet apart. Therefore, a noise level of 55 dBA from a nearby source would barely be audible during normal conversation.

The primary sources of existing human caused noise within the HMA are associated with the oil and gas operations (especially drilling and pipeline compressor stations). Other sounds may include normal noises associated with livestock grazing, and temporary increased related to hunting activities from increase vehicle traffic and gun shots. In addition to human-induced noise background noise levels such as wind, water sources, or wildlife that may be present.

Noise from an individual source is the greatest in the immediate vicinity of the origination of the sound. Noise decreases with increasing distance from a source. The BLM estimates noise levels at a given distance using the Inverse Square Law of Noise Propagation (Wikipedia, 2011). Essentially, this law states that noise decreases by 6 dBA with every doubling of distance from a source. For example, if the noise at 50 feet from an industrial engine is 70 dBA, the noise at 100 feet would be 64 dBA, and 58 dBA at 200 feet.

Table 3-25. Typical Noise Generators and Decibels for each Generator.

Sound Pressure Level dBA	Common Indoor Noise Levels	Common Outdoor Noise Levels
110	Rock Band	----
105	----	Jet flyover at 1,000ft
100	Inside New York Subway Train	----
95	----	Gas Lawn mower at 3ft.
90	Food blender at 3ft	----
80	----	Noisy Urban daytime
70	Vacuum at 3 ft.	Lawn mower at 100ft
60	Large business office	----
50	Dishwasher in next room	Quiet urban daytime
40	Small theater, large conference room	Quiet urban nighttime
35	----	Quiet suburban nighttime
33	Library	----
28	Bedroom at night	----
25	Concert hall (background)	Quiet rural nighttime
15	Broad cast at recording studio	----
5	Threshold of hearing	----

3.4.10 WASTES, HAZARDOUS AND SOLID

The HMA contains a number of oil and gas well pads and oil shale research and development sites which are known to use potentially hazardous materials in drilling and production operations. All hazardous materials at these sites should be properly contained, transported and stored as per current regulation. In addition, these locations may have certain amounts of solid waste disposal sites such as reserve pits and cuttings pits.

The BLM reviewed the area for areas of superfund, solid or hazardous waste disposal sites and for Resource Conservation and Recovery Act (RCRA) sites available as geographic information system (GIS) download files on the Colorado Department of Health and Environmental Quality website (CDPHE, 2011). The HMA includes the Rio Blanco County Oil Shale Companies Ca track as a historical corrective action site under RCRA, but no other waste related sites were reported. A historical corrective action is the process by which regulated facilities investigate and remediate, as necessary, all contamination (soil, ground water, surface water, air) associated with their releases into the environment. The corrective action process is intended to ensure that identified contamination does not exceed allowable standards and does not present an unacceptable risk to human health and the environment, including ecological receptors and drinking water resources.

3.4.11 SOCIOECONOMICS

The HMA is located within Rio Blanco County in northwestern Colorado. Rio Blanco County is among the most rural communities in Colorado and the United States; it comprises approximately 2,061,440 acres with a total population of approximately 6,666 and only 2.1 persons per square mile. The population of Rio Blanco County grew by 11.4 percent between 2000 and 2010. The median age is 37.2 years old, with 25.4 percent of the population being under the age of 18, and 11.6 percent age 65 or older (U.S. Census Bureau 2010). The dominant areas of employment in Rio Blanco County are regional services, energy and natural resources, recreational tourism and agriculture. The energy sector is rapidly expanding in northwest Colorado increasing the number of jobs in natural gas and oil shale exploration to Rio Blanco County (Northwest Colorado Socioeconomic analysis and Forecasts 2008). The unemployment rate in Rio Blanco County is currently 6.4 percent this number is down from its recent peak at 8 percent in February 2010 (U.S. Department of Labor, Bureau of Labor Statistics 2011).

CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section describes the environmental consequences of implementing Alternatives A, B, C and D listed in Chapter 2 on resources within the Piceance East Douglas Herd Management Area (HMA). This section describes the Direct and Indirect Effects, and Cumulative Effects for all resources that may be impacted from the alternatives.

The BLM has based its analysis of effects on the premise that all standard operating procedures found in Appendix A and B, and other BLM requirements will be followed during the implementation of the Proposed Action and the Alternatives. Design features or management practices which are intended to avoid or minimize environmental harm and which have been incorporated into the alternatives are treated as an inherent part of the action. The BLM analysis is based on the best available information.

For the purposes of analyzing cumulative impacts on all affected resources, the following table describes the past, present, and reasonably foreseeable relevant actions within the HMA. The cumulative impacts study area for the purpose of evaluating cumulative impacts varies by resource.

Table 4-1. The Past, Present, and Reasonably Foreseeable Future Actions

Issue-Project-Name or Description	STATUS		
	Past	Present	Future
Issuance of decisions and grazing permits through the allotment evaluation process/standards and	X	X	X

guidelines assessment and the reassessment of the associated allotments			
Livestock Grazing	X	X	X
Wild Horse Gathers	X	X	X
Recreation	X	X	X
Invasive Weed Inventory and Treatments	X	X	X
Wild Horse issues, issuance of Multiple Use Decisions, AML Adjustments and Planning	X		X
Spring Development	X	X	X
Wildfire and Emergency Stabilization and Rehabilitation	X	X	X
Wind Energy Met Towers			X
Oil and Gas Development: Well Pads Access Roads Pipelines Gas Plants Facilities	X	X	X
Power Lines	X	X	X
Oil Shale	X	X	X
Seismic	X	X	X
Vegetation Treatments	X	X	X

4.2 EFFECTS COMMON TO ALL ALTERNATIVES

Impacts resulting from gather operations are described by resource in Alternative A below and would be similar for those resources under Alternatives B, C, and D. For a comparison of the alternatives see Table 2-1.

4.3 ASSUMPTIONS FOR ANALYSIS

See Section 2, Proposed Action and Alternatives

4.4 ALTERNATIVE A - Proposed Action - Gather All Wild Horses, Selective Removal of Excess Wild Horses to Low End of AML, Administer Fertility Control, and Adjustment of Sex Ratio (60% Studs/40% Mares).

4.4.1 EFFECTS ON SOIL, WATER & AIR

Soil Resources

Direct and indirect impacts from the Proposed Action would include but are not limited to, disturbance of vegetation and soil compaction at the trap sites due to wild horses and vehicles use for the gather. There are approximately 2,463 acres of saline soils (>16mmhos conductivity). These soils would generally be less stable and recover more slowly than other soils. The BLM expects some wind-born soil loss due to the operation of the helicopter at low elevations. Since use at most gather sites is limited to short time periods (a few days), impacts are expected to be minor in these areas. All direct and indirect impacts from wild horse gathering activities are expected to be short-term (less than 2 years) and to fully recover to pre-wild horse gather conditions within 3 years. Not conducting wild horse gathers during periods of saturated and muddy soils is likely to reduce direct impacts to soils from hoof action that could otherwise occur.

Continued grazing, regardless of species, removes or alters vegetation that protects soils from runoff, and wind events. Hoof action can compact soils and reduce infiltration and in some cases the combination of these impacts can impair soil productivity. Removal of wild horses would aid in relieving pressures on the existing drainage areas where there are poor soils. Soil impacts are dependent on soil type and properties, vegetation type and density, watershed aspect and slope, amount of precipitation, and management practices but could increase in some areas due to the Proposed Action. Vegetation removal due to grazing could deplete canopy cover and roughness or stem densities needed to protect watersheds from runoff/erosion and could cause long-term increases in hill-slope soil erosion. Sensitive (e.g. fragile soils) watersheds have a very high erosion potential, are frequently high in salts, and are more susceptible to direct impacts.

In general, the removal of wild horses and reductions in horse numbers would aid in relieving grazing pressures on sensitive soils. Because wild horses tend to concentrate in areas to access cover, water and forage, watershed conditions in sensitive soils when they correspond to concentration areas can become degraded. Sensitive soils include fragile soils, soils with landslide potential, steep slopes and saline soils. Sensitive soils when degraded by grazing and trailing are likely to produce more salt and sediment downstream, indirectly impacting water quality. Grazing impacts attributable to livestock would continue under this alternative.

Water Resources

The transport of salt and sediment will correspond to peak storm events and will tend to be short-term. Proper grazing in terms of intensity and duration is consequential in reducing erosion and sedimentation from both streambed and upland sources due to healthy vegetation. Improving the rangeland condition and vegetation cover by reducing wild horses, would generally have a

positive effect on watershed stability and water quality. Reducing wild horses would have a positive effect on watershed conditions, livestock grazing impacts would continue under this alternative.

Not conducting wild horse gathers during periods of saturated and muddy soils is likely to reduce direct impacts to soils from hoof action which would reduce the anticipated level of soils available to reach surface waters.

Direct and indirect impacts from gather activities would include but are not limited to local water quality changes due to the disturbance of vegetation and soil compaction at the trap sites. There are approximately 2,463 acres of saline soils (>16 mmhos conductivity) and the fragile soils described earlier. These soils would generally be less stable and recover more slowly than other soils due to gather activities. Soils in gather areas will likely become compacted due to wild horses and vehicles use for the gather and some wind-born soil loss is expected due to the operation of the helicopter at low elevations. Since most gather sites for methods 2-4 will only be used only once, impacts are expected to be minor in these areas. All impacts from wild horse gathering activities are expected to be short-term (less than 2 years) and to fully recover to pre-wild horse gather conditions within 3 years.

Springs identified in the Affected Environment are expected to be impacted due to the concentrated use by wild horses, wildlife and livestock. Impacts are more likely for non-seasonal and non-saline springs due to their higher value as water sources. Impacts to springs typically involve vegetation damage from grazing and trampling, reducing infiltration by compaction of soils at the source of the spring. In some cases trampling by wild horses and other animals can cause springs to cease production or result in more surface water that can be subject to evaporation. Spring surveys completed in 2009 and 2010 have identified some springs that this may be occurring. Managing the horse herd within AML would likely reduce impacts since there would be less grazing and concentrated use of water resources.

Removal and reduction of wild horse populations would reduce overall direct impacts to water resources from wild horses, livestock and wildlife, particularly when use from these animals overlap. Indirect impacts to surface hydrology are proportional to the number of wild horses in the HMA and can include increased erosion and peak flows due to upland degradation. Thus these indirect impacts are likely to decrease under this alternative.

Air Quality

The environmental consequences to air quality after gathering activities from Alternative A would include an overall reduction in the periodic and local production of dust and the short-term local increase in fugitive dust during gathering activities. Reductions in the local wild horse herd due to the Proposed Action will minimize direct impacts from wild horse trailing to and from breeding areas, forage, water and nutrient sources that can aerosolize dust. Indirect impacts from eolian erosion and wind-borne particles are also expected to reduce in proportion to wild horse grazing impacts on vegetation are expected to reduce air born dust as compared to current conditions.

Dust production due to wild horse gathering activities may be noticeable locally, especially during drier times. Direct impacts from wild horse gathering activities would include dust production due to surface disturbance from wild horses trailing, use of staging areas, vehicles and helicopter use. Dust production from these activities will be localized and short-term (just during gather activities) and if these activities occur with adequate soil moisture, affects would not be noticeable or measurable.

The Colorado Air Pollution Control Division (APCD) estimates the 24-hour average of the maximum PM_{10} levels (PM_{10} is a measurement of air-borne dust particles of 10 microns or less) in rural portions of western Colorado to be near 50 micrograms per cubic meter ($\mu g/m^3$). This alternative is not likely to exceed this dust standard and regional air quality is expected to benefit from the reduction of wild horse herd numbers, although this benefit is not likely to be noticeable or measurable. Regional impacts to air quality receptors such as the Flat Tops Wilderness Area to the east and Dinosaur National Park to the north are unlikely to be impacted by this project.

4.4.2 EFECTS ON VEGETATION RESOURCES

General Vegetation

During gather operations, vegetation would be disturbed at the location of trap sites and holding facilities due to congregation and trampling by wild horses. The amount of vegetation that would be disturbed or affected is dependent on the number of wild horses gathered at a specific site and the duration those wild horses remain at the trap site/holding facility. Vegetation disturbance is short term and limited to locations of temporary gather and holding facilities, it is expected that plant communities will recover from disturbance within three years. By slowing the wild horse population growth rate and increasing the time between gathers needed to bring the population to within AML, vegetation disturbed at trap sites and holding facilities which are re-used during cyclical gather operations would have increased opportunity for recovery between gathers.

Removal of approximately 247 wild horses from the HMA and 78 wild horses from areas outside the HMA will decrease wild horse use in these areas by 2964 AUMs inside the HMA and 936 AUMs in areas outside the HMA. In addition, WRFO anticipates a reduction in year-long grazing by wild horses until the population reaches the high range of AML, with the expected result that plant communities will recover while the wild horse population is within the range of AML. Under this alternative, BLM would lower the population to within AML which are aimed to prevent heavy continuous season long grazing within the HMA and avoid transition from the DPC to the less desirable Wyoming big sagebrush/rhizomatous wheatgrass state, or the least desirable states of rabbitbrush/rhizomatous wheatgrass, or cheatgrass. This alternative would also avoid the transition of sites which have already converted to the Wyoming big sage brush/rhizomatous wheatgrass state to the rabbitbrush/rhizomatous wheatgrass state or the cheatgrass dominated state. Maintenance of the DPC, or avoidance of transition from the less desirable state to the least desirable state is important in maintaining rangeland health, as well as avoiding a loss of forage production and preventing accelerated erosion. Because wild horses cannot be moved to different pastures throughout the year to limit season long grazing, this alternative reduces the number of wild horses utilizing the vegetation to prevent heavy

continuous season long grazing. Reduced utilization of vegetation species by wild horses is expected to result in increased vegetation recovery.

Rangeland monitoring studies support the need for a reduction in the population of wild horses in the HMA so that rangeland recovery may take place and standards for rangeland health may be met. Utilization data collected in April 2011 showed areas which vegetation utilization is at high moderate to severe levels. These levels were observed during a good precipitation year in combination with reduced livestock grazing use. Under a normal or dry precipitation year with livestock utilizing the total amount of allocated forage, the number and size of areas receiving heavy to severe use would be expected to increase. This increase in use on areas receiving high moderate use would begin to receive higher levels of use, which is above acceptable levels and would lead to rangeland deterioration. Continued heavy use of range sites can transition rangeland sites to less productive and less valuable rangelands for wild horses, wildlife, and livestock. Should the Proposed Action be fully implemented and the wild horse population managed in the future within the prescribed AML, then it is reasonable to expect that rangeland vegetation would experience both a short and long term recovery in cover and production. The WRFO will continue to collect additional rangeland monitoring data between gathers to document the long and short term recovery of vegetative resources within the HMA.

Noxious Weeds

Wild horse gather activities would disturb soils in localized areas, primarily associated with traps and holding pens. Follow-up inspections by the BLM of these sites and treatment of any noxious weeds would prevent noxious weeds from invading and dominating adjacent native plant communities.

The BLM anticipates that the removal of wild horses over time would decrease overall impacts of wild horse use and proliferation of invasive, non-native species. As wild horses and livestock are managed within allocated forage levels, grazing pressure is reduced on native vegetation. Those native vegetation communities are then more resilient and better able to compete with non-native species such as cheatgrass and houndstoungue, and more able to help prevent these non-native species from dominating degraded plant communities.

Wetland-Riparian

Actual gather operations would have no direct impact on any riparian or wetland sites as no traps will be placed in or adjacent to riparian areas. By suppressing effective fecundity, the risk and intensity of grazing effects attributable to a chronic excess of wild horses (i.e., exceeding established population objectives) would be reduced in the short term.

Implementation of the Proposed Action is expected to promote more seasonality in subsequent grazing use patterns by wild horses, relieve the influence of long duration wild horse use, and allows livestock management prescriptions designed to enhance riparian and channel conditions to operate as intended. Cumulative grazing use patterns that are more seasonal, of shorter duration, and of reduced intensity would be more consistent with desired maintenance or improvement of these at-risk riparian and channel systems.

In all cases, wild horses contribute to the overall removal of herbaceous material from channel features and valley terraces. Wild horses contribute either through prolonging the duration and/or intensity of grazing use, exacerbate grazing-related effects on riparian condition and function, including: 1) increasing the rate and absolute quantity of bank and floodplain vegetation removed, which impairs the system's ability to capture and retain sediment for channel development and restoration processes (this effect can involve extending concentrated use more deeply into the growing season or increasing dormant season use when there are no further opportunities for regrowth and reestablishment of effective stubble), 2) prolonging growing season use that depresses the vigor and density of channel vegetation and selects against those obligate herbaceous forms that yield optimum channel stability and erosion resistance, and 3) reducing plant vigor and density and reducing residual surface litter on valley terraces, which reduces moisture infiltration and alluvial storage that sustains and prolongs delivery to adjacent channels through the summer and fall months. Reducing the duration and intensity of grazing on valley terraces along riparian-bearing channels within the HMA would increase foliar cover, surface litter, and stem/root mass densities, thereby enhancing moisture infiltration and directly increasing channel recharge and contributing incrementally to prolonged flow and vegetation expression in adjacent channels.

Removal of wild horses outside the HMA would eliminate the minor influence of wild horse use on about 14 miles of riparian-bearing channel, within the Spring Creek and Boise Creek systems but more importantly, would eliminate the potential for the eventual development of grazing-related problems on these systems as wild horse populations expand.

Special Status Species

The potential impacts associated with the Proposed Action are short term impacts from placement of traps and wings or herding wild horses with a helicopter on or across the habitat of one on these special status plant species. Long term impacts can be associated with the number of wild horses within the areas under consideration over a given time period.

No short or long term impacts, negative or positive, are anticipated to occur to the Dudley Bluffs twinpod, the narrow-stem Gilia, the Piceance bladderpod, the Utah gentian and the sun-loving meadowrue. No impacts are anticipated to these five plants due to the steepness of their habitat and due to the lack of evidence that wild horses use their habitats.

The Dudley Bluffs bladderpod is likely the only special status plant species that could be impacted by the Proposed Action. Its habitats are less steep than those of the other special status plants and are thus more likely to be utilized by wild horses.

During the removal operation, wild horses would be herded by helicopter to a trap site. When the wild horses are not near the trap, they would be allowed to proceed at their own pace, rather than being driven by the helicopter, on trails they are familiar with and use frequently. This part of the operation is not expected to impact the Dudley Bluffs bladderpod. Any trails used in the gather operation which cross habitat for this plant are well used and have been so for many years. No individuals of this plant are expected to occur within these well traveled trails.

The greatest potential for impact from the removal operation on the Dudley Bluffs bladderpod is the location and placement of the trap and the trap wings. Construction of the wings and trap involves mostly hand labor and very little surface disturbance. Some disturbance comes from wild horses being pushed and squeezed in the wings and the trap. There is likely to be surface trampling by the wild horses in the wings and in the trap. Gather operations will not utilize any potential habitat of the Dudley Bluffs bladderpod or affect any individuals of this plant in any aspect of the removal operation.

The Proposed Action is not likely to have any effect, positive or negative on the Dudley Bluffs twinpod, Dudley Bluffs bladderpod, the narrow-stem Gilia, the Piceance bladderpod, the Utah gentian, or the sun-loving meadowrue. BLM Botanist discussed the potential for impacts through personal communications with USFWS on July 9, 2010.

4.4.3 EFFECTS ON WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Wildlife, Terrestrial

Big game: Although it is recognized that both deer and elk populations are important considerations in the project area, discussion concerning the effects of the Proposed Action will concentrate on mule deer as the species more vulnerable to direct and indirect herbivory-related effects.

Extensive and potentially disruptive helicopter operations would occur in the Piceance and East Douglas areas during late September 2011. Helicopter herding represents a high-intensity, but transient source of disturbance that would become increasingly concentrated and more frequent near the trap-site. Most big game would be on their summer ranges during this timeframe. By July, offspring are sufficiently mobile to avoid disturbances, with little risk of separation from adults. Based on 2010 wild horse distribution, helicopter herding may occur across 5% of the summer range in GMU 22. Virtually no summer range would be involved in GMU 21. At any given time, less than 3% of summer ranges would be subject to active helicopter herding operations, and more concentrated gather facility activity would represent less than 1% of the summer range available in GMU 22. It is doubtful that dispersed helicopter herding and the initially intense, but short-term and relatively predictable gathering/holding activities would contribute significantly to deterioration in animal fitness at the population level, but big game would tend to avoid or be displaced from areas within 0.5 to 1 mile of this activity (500-2000 acres). It is anticipated that displaced animals would return, more or less, to pre-disturbance distribution soon after gather operations at an individual site were complete.

In general, the seasonal ranges of wild horses are not as spatially distinct as big game and their continuous, yearlong pattern of occupation tends to largely coincide with traditional big game transition and winter ranges. This distribution pattern appears to be exaggerated at higher wild horse densities similar to present. The effects of wild horse removal on big game habitats involves the incremental (and locally substantive, e.g., lower Yellow Creek drainage) reduction in the rate, persistence, and ultimate degree of herbaceous and woody plant material removed by large grazers within and surrounding the HMA. Forage-related impacts between wild horses and

big game are additive to and similar in nature to livestock and inter-specific big game competition. Although wild horses compete with big game for forage resources, authorized forage use within the HMA has been integrated in a multiple use context. Under the Proposed Action, reducing the overall grazing load through wild horse reduction or removal would provide both immediate and longer-term indirect improvement in big game forage conditions throughout the year. Present wild horse use within the HMA is nearly double that currently allocated, and reductions of wild horses from within the HMA would reduce overall grazing use attributable to livestock and wild horses on herbaceous and woody forage within the HMA by about 23% (based on active livestock preference). Grazing management which moderates or defers use of mutually preferred forages would increase herbaceous forage availability, reduce reliance on alternate woody forage by livestock and wild horses or inappropriate seasonal use by big game (as a winter forage base for deer), and maintain or enhance plant diversity and vigor in the mixed shrub and sagebrush communities (promoting divergent forage selection and enhancing animal nutrition, especially on late summer through early winter ranges).

Removal of wild horses from areas outside the HMA boundary would eliminate competitive interactions of wild horses from about 13% of the Piceance Basin's deer summer range extent and 8% of the Douglas Basin's deer summer ranges. Competitive interaction among wild horses and big game during the summer occurs when wild horses make prolonged growing season use of higher elevation sagebrush and mixed shrub communities, especially in close proximity to Piceance Basin's relatively limited aspen habitats. Favored fawn and calf-rearing habitat along the Cathedral Rim is best represented by aspen woodlands and surrounding mixed shrub communities within one mile of free water. Considering the attraction of water for all summer/fall grazers, these areas are frequently subjected to heavy use of herbaceous growth. Declining availability in preferred forb forage, both through grazing use and a decline in conditions amenable to soil moisture retention (i.e., standing crop and litter), reduces the prospects of deer or elk maintaining favorable nutritional status through the fawn or calf-rearing period. It is anticipated that overall grazing use by wild horses and livestock would be reduced by 50-60% with the proposed removal of about 50% of the wild horses in the East Douglas, Boxelder, and Square S areas.

Wild horses have expanded their range to include large expanses of important big game winter habitats outside the HMA (see Table 3-12in Affected Environment) and presently cohabit 60,000 to 70,000 acres of special value winter ranges outside the HMA in GMU 21 and 22, respectively. Removal of wild horses from areas outside the HMA boundary would eliminate competitive interactions of wild horses from about 30% of the deer winter ranges in the Basin, including 54% of its severe winter range habitats in GMU 22. Similarly, wild horse removal would remove forage competition attributable to wild horses on about 17% of its winter ranges, including 34% of its critical winter range and 20% of its winter concentration areas in GMU 22. In situations where herbaceous forage is limited (i.e. excessive grazing use in preferred use areas, declining range condition, or limited site potential) wild horses make increasing use of woody forages relied upon by wintering deer. Forage competition is exaggerated with coincident use of southerly exposures during the winter use period by deer and wild horses. Wild horses, by virtue of behavior and physique, are capable of seeking new range when forage supplies are exhausted, whereas deer, because of strong and rigid fidelity to traditional seasonal home ranges, will remain on discrete winter range parcels depleted of forage by transient groups of wild horses.

Although it is improbable that substantive disruption of big game distribution would occur in the project area, CDOW relies on annual big game harvest to maintain herds at desired population levels and it is important to minimize, where practicable, inadvertent disruption of sport hunting for big game in GMUs 22 and 21. Helicopter activity is anticipated to take place in late-September and would coincide with a portion of the archery season. It is recommended that gather planning be coordinated with local CDOW staff in an effort to develop mutually compatible strategies that may reduce the intensity and localize the expanse of helicopter-related disturbances.

Dusky grouse: Gather operations would take place outside the dusky grouse reproductive period when broods would be closely associated with heavy coniferous forest cover and relatively isolated from helicopter-based operations. Gather operations would remove wild horses from dusky grouse habitat associated with the Magnolia area (16,000 acres), the Cathedral Bluffs on the Ryan/Black Sulphur drainages (17,000 acres), and along the length of Calamity Ridge (34,000 acres), thereby reducing coincident occupation of wild horses in dusky grouse habitat in GMUs 21 and 22 by 65%. Wild horses remaining within the HMA's suitable and occupied dusky grouse habitats (~37,000 acres in the Square S, Boxelder, East Douglas areas) would be reduced to half their current numbers. Reductions and removals within and outside the HMA, respectively, would reduce overall grazing intensity by wild horses on favored ridgeline and basin positions, as well as season-long use attributable to wild horses (who begin use on these habitats by March) by 50-60% -- levels that would contribute substantially to the development and effectiveness of herbaceous ground cover through the nest and brood rearing periods.

Raptors and non-game wildlife: As proposed, 2011 gather operations associated with the Proposed Action would be confined to timeframes outside the reproductive period of virtually all non-game birds and mammals (i.e., late September) and would, therefore, have no potential to directly influence these activities.

In the short term, grazing influences would be primarily confined to increased herbaceous expression as forage and cover available in ridgeline, bottomland, and basin mixed-shrub and big sagebrush communities. Presently, about 48% (about 123,000 acres) of the big sagebrush and mixed shrub communities in GMUs 21 and 22 are encompassed by pastures occupied by wild horses and are subject to their grazing-related contributions. The previous should be better presented in the vegetation section. Removal of wild horses outside the HMA would reduce overall shrubland involvement by 60% and confine potential influences to about 19% of those types within the Douglas and Piceance Basins (49,000 acres). It is unlikely that proposed wild horse reductions and removals would influence the character of the project area's woodlands and densely vegetated mountain shrub slopes as non-game habitat.

Although local changes in ground cover would be highly variable across the project area, overall 23% reductions in livestock and wild horse grazing intensity within the HMA would be substantial, with notably higher reductions in favored use areas, such as 50-60% reductions in overall livestock/wild horse use in higher-elevation mixed shrub habitats along the Cathedral Bluffs and 80% reduction in season-long grazing use in the lower Yellow Creek valley. Reducing excess herbivory influences on herbaceous understory expression would help prompt

widespread enhancement and development of herbaceous ground cover throughout the project area's shrubland habitats, as a key determinant in the capacity of habitats to support raptors and their small mammal and non-game bird prey. It is expected that reductions in the duration and intensity of use on shrub-steppe habitats within the HMA and similar situations outside the HMA (up to 48% of those types in the WRFO south of the White River) would be capable of increasing the density of virtually all non-game members and promoting more continuous distribution of those species requiring better developed herbaceous understories.

Wildlife, Aquatic

As conditioned, the Proposed Action would have little, if any, discernible direct influence on aquatic wildlife communities. Proposed gather operations would not take place on the White River valley and would have no direct influence on the river or its floodplain. Safeguards integral with the Proposed Action are intended to reduce the risk of water contamination from helicopter fueling or inadvertent fuel spills. Drive trapping operations, including helicopter staging areas and drive trap/holding areas would be sited to preclude direct or indirect riparian or aquatic habitat involvement.

Wild horse use is not currently influencing riparian character or aquatic conditions in the Douglas Creek drainage. This system within the HMA tends to be resistant to widespread herbivory effects due to its steep incise walls, heavy willow and tamarisk growth, and pervasive influence of beaver (e.g., damming and ponding). Planned 50% reductions in the number of wild horses inhabiting the East Douglas area would be consistent with maintaining riparian and aquatic habitat conditions in this drainage.

Lower Cathedral Creek within the HMA also tends to be resistant to widespread herbivory-related effects due to its steep incise walls and pervasive influence of beaver (e.g., damming and ponding). Upstream segments of Cathedral Creek and Lake and Soldier Creeks outside the HMA become increasingly less incised and are more vulnerable to potentially deleterious herbivory-related effects, including trampling damage of channel features and incompatible levels or duration of grazing use in riparian communities (e.g., adverse composition shifts, reduced vigor and function of bank and floodplain vegetation). Wild horse use was evident in and along the Cathedral Creek channel above its confluence with Soldier Creek (outside the HMA) in June 2010. Removal of wild horses from outside the HMA would confine wild horse use to portions of Cathedral Creek better able to withstand the effects of collective seasonal and season-long grazing. See further discussion in *Threatened, Endangered, and Sensitive Animal Species* section.

Reducing the HMA's wild horse population by 60-65% and those groups of wild horses likely to use lower Yellow Creek by 80% should have the effect of not only reducing the overall grazing use intensity in this watershed, but help promote seasonality in the grazing use patterns of wild horses and allow more effective vegetation recovery after the livestock grazing use period. By reducing the confounding influence of yearlong wild horse use, livestock grazing systems that have been designed to operate in a manner that are compatible with riparian and channel function would be allowed to express themselves in the eventual development of obligate riparian/wetland forms (e.g., sedge, rush) which offer superior erosion resistance and are key elements in

supporting processes that improve and restore channel function. Proper functioning systems, by merit of riparian vegetation expression, increased channel stability, prolonged flow, and more complex channel morphology, generally support richer and more diverse vertebrate or invertebrate animal communities than degraded stream systems. See further discussion in *Threatened, Endangered, and Sensitive Animal Species* section.

Migratory Birds

As proposed, 2011 gather operations associated with this alternative would be confined to timeframes outside the nesting season of all migratory birds (late-September) and would, therefore, have no potential to directly influence the outcome of migratory bird nesting activities. The timing, intensity and duration of gather activities would not be expected to have any substantial adverse consequences on local bird populations.

Grazing-related effects of excess wild horses within the HMA and populations outside the HMA are primarily associated with reductions in the availability of intervening herbaceous cover as forage (including invertebrate substrate) and cover during nesting and the rearing of young. Strong, localized reductions in the density and height of herbaceous ground cover from collective ungulate grazing during the nesting season can substantially (50% or more) depress nest success and/or breeding densities of, particularly, ground-nesting and near-ground nesting birds (e.g., dusky grouse, Virginia's warbler, green-tailed towhee) and would likely extend more indirectly to survival and recruitment of most shrubland birds that are insectivorous by nature (e.g., dusky flycatcher) or rely heavily on invertebrate prey to feed nestlings during brood-rearing functions (e.g., Brewer's sparrow) (Walsberg 2005, Krueper et.al. 2003). Collective ungulate grazing-related effects would be most concentrated and pronounced on ridgeline and bottomland sites composed of various big sagebrush and mixed shrub vegetation communities.

Presently, about 26% (24,400 acres) and 60% (98,900 acres) of the big sagebrush and mixed shrub communities in GMU 21 and GMU 22, respectively, are encompassed by pastures occupied by wild horses and are subject to their grazing-related influences. Removal of wild horses outside the HMA would reduce overall sagebrush community involvement by up to 60% in the Piceance and Douglas Basins, such that 7% of sagebrush communities could be influenced by wild horse use within GMU 21 (reduced from ~24,000 to 6,500 acres) and 26% within GMU 22 (reduced from ~100,000 to 42,000 acres).

Gather strategies associated with these alternatives would have similar grazing-related influences on migratory bird nesting activity, though with efforts to suppress wild horse reproduction through contraceptive use and sex ratio adjustments, gather operations would need to be scheduled less frequently (e.g., every eighth year) under the Proposed Action. The Proposed Action may tend to prolong grazing effects associated with consecutive years at the higher end of AML (e.g., exceeding the midpoint of 185 head: 2 years versus 3 years under Alternative A), but conversely, lower rates of increase may reduce the risk and intensity of grazing effects attributable to the historically chronic excess of wild horses in the HMA (i.e., exceeding established population objectives).

Special Status Species

As conditioned, the operational aspects of the gather would have little, if any, influence on special status species. Conversely, removing wild horses from outside the HMA and within the HMA would have important ramifications on several species and species-groups whose reproductive performance, abundance and distribution, and overall fitness are strongly influenced by the availability of well-developed herbaceous ground cover.

Aquatic species, including fish and northern leopard frog**:** Proposed gather operations would not take place on the White River valley and would have no direct influence on critical habitat components for Colorado pike-minnow or habitats for BLM-sensitive fish and amphibians. Safeguards integral with the Proposed Action are intended to reduce the risk of water contamination from helicopter fueling or inadvertent fuel spills. Drive trapping operations, including helicopter staging areas and drive trap/holding areas would be sited to preclude direct or indirect riparian or aquatic habitat involvement.

The proposed gather would reduce the number of wild horses within the HMA by 50% and reduce overall livestock and wild horse grazing intensity within the HMA by 23%. The extent and incidence of range subject to season-long herbivory use would also decline. These effects would complement efforts to moderate the intensity of grazing use and its influence on the vigor and density of herbaceous ground cover as it relates to watershed health and downstream aquatic habitats (see discussion in Riparian and Wetland section).

Localized grazing-related influences of wild horses would be eliminated on about a quarter million acres outside the HMA. Although wild horse use is not widely implicated in declining trends in aquatic or riparian conditions in the project area (see Riparian and Wetland section), deteriorating channel conditions in lower Yellow Creek since the late 1980's and its five miles of associated special status fish and amphibian habitat below Barcus Creek (about 40% of the tributary mountain and flannelmouth sucker habitat in the WRFO) suggest that current levels of year-long wild horse use, as a direct or indirect contribution to seasonal livestock and big game use, is incompatible with the maintenance of erosion-resistant riparian vegetation. The stability and structural quality of aquatic habitat in this system is predicated on obligate forms of bank and floodplain vegetation, which typically deteriorate when subjected to season-long herbivory. Under the Proposed Action, wild horse populations likely to use this portion of lower Yellow Creek would be reduced by 80% (i.e., 166 to 33 head). In another instance, removing wild horses from outside the HMA would resolve potential direct and indirect grazing-related influences (e.g., adverse composition shifts in riparian communities, reduced vegetation-derived bank armoring) associated with 29 wild horses that have dispersed outside the East Douglas portion of the HMA and established season-long use in the Cathedral Creek pasture of the Cathedral Bluffs allotment. This pasture, outside the HMA, encompasses an additional 6.5 valley miles of occupied trout habitat in Lake, Soldier, and upper Cathedral Creek.

Greater sage-grouse**:** Gather operations would take place outside the sage-grouse reproductive period when broods would be largely independent, fully mobile, and capable of avoiding disturbance. Helicopter-based gather operations in the upper reaches of the Square S (within the HMA) and Reagles allotment (outside the HMA) are expected to be brief and short term (no

more than 2-3 days) and confined to the early fall. More influential would be the indirect effects of wild horse reduction and/or removal on the utility of nest and early brood habitat (i.e., grazing-induced reductions in the density, height, and availability of herbaceous cover as forage and cover). Gather operations would remove wild horses from sage-grouse habitat associated with the Magnolia (i.e., Magnolia, Ryan/Black Sulphur drainages) and North Piceance removal areas and reduce the coincident occupation of wild horses in sage-grouse habitat by about 50%. Wild horses remaining within the HMA's suitable and occupied sage-grouse habitats (~9000 acres in the Square S, Boxelder, East Douglas areas) would be reduced to half their current numbers. Reductions and removals within and outside the HMA, respectively, would reduce the current grazing intensity by cattle and wild horses on these confined ridgeline sage-grouse habitats, as well as season-long use attributable to wild horses (who begin use on these habitats by March) by 50-60% -- levels that would contribute substantially to the development and effectiveness of herbaceous ground cover through the nest and brood rearing periods.

Bald eagle**:** There would be no gather activities or facilities sited in the White River valley. During the late fall and winter months, birds would be making dispersed and opportunistic use of uplands off the river valley. Any exposure of bald eagles to project-related disturbances would be momentary and incidental.

Northern goshawk**:** As proposed, dispersed gather activity during early fall (September 2011) would have no influence on goshawk nesting function or winter foraging efficiency. The timing, intensity and duration of gather activities would not be expected to have any substantial adverse consequences on local goshawk populations.

White-tailed prairie dogs**:** White-tailed prairie dogs are confined to a small area along the Highway 64 corridor—a site unlikely to be selected for helicopter or trapping/holding operations. In the unlikely event that short term operations were necessary at this locale, it would occur during the period of prairie dog dormancy. These timeframes would avoid the reproductive period and would coincide with dwindling above-ground activity of adults and, ultimately, hibernation through February. Any trapping operations would involve no physical alteration of habitat besides a brief period of vegetation trampling.

Brewer's sparrow and sagebrush vole**:** Brewer's sparrow and sagebrush vole are species that are believed to be widely distributed in big sagebrush and mixed shrub habitats across the project area. Reproduction in each of these species would normally be complete by early August and would not coincide with any anticipated gather activity (see discussion in Migratory Bird section regarding postponement of gather operations). The proportion of habitat and number of animals influenced by those facets of the gather that involve longer duration impacts (e.g., helicopter staging, holding and trap sites) would be discountable at the landscape and population levels (see for example, Migratory Bird section). Because the reproductive success and subsequent recruitment of migratory birds and small mammal populations tend to increase in direct response to foliage volume and richness, both of these species and their respective species-groups would benefit from reductions in grazing use intensity (generally 25-50%) attending wild horse removals outside, or reductions within the HMA. These effects would extend to about 75,000 acres of big sagebrush and mixed shrub habitats outside the HMA and about 50,000 acres inside the HMA, and would account for about 50% of the these shrubland types in the WRFO south of

the White River.

Bats**:** It is unlikely that the project area offers habitat suitable for hibernation or rearing of young for the three species of bat (big free-tailed bat not known to reproduce in Colorado). Perhaps widely distributed singly or in small groups during the summer months, the Proposed Action is not expected to have any influence on local bat populations or distribution.

Great Basin spadefoot*:* These toads are closely associated with water sources that retain free water for sufficient time periods (at least five weeks) to allow successful development of toad larvae into immature terrestrial forms. Dispersal from these waters occurs, but it is likely that the toads remain closely associated with these sites throughout their life. Reducing the intensity and duration of animal use on these water sources would likely enhance the prospects for toad survival and recruitment by reducing trampling mortality, prolonging the availability of ponded water (in certain cases), and allowing for the redevelopment of grounds cover that is effective in concealing young toads from predation.

4.4.4 EFFECTS ON LIVESTOCK GRAZING

Under the Proposed Action, wild horse gather operations will likely have few direct impacts to livestock grazing. Livestock located near gather activities would be temporarily disturbed or displaced by the helicopter and the increased vehicle traffic during the gather operations. Typically livestock would move back into the area once gather operations cease.

Removal of wild horses from both within and areas outside of the HMA would result in an increase in forage and water availability and quality for both livestock and wildlife, reducing competition between livestock and wild horses. Livestock operators would be able to fully utilize their authorized active grazing preference and operate at full numbers.

4.4.5 EFFECTS ON WILD HORSES

Impacts to wild horses under Alternative A would be both direct and indirect, occurring on both individuals and populations as a whole. Based on WinEquus (Appendix E) population model runs, BLM anticipates the growth rate within the HMA would be reduced under this alternative.

Disturbance of wild horses by activities associated with any gather are unavoidable. Wild horses must travel over varying terrain to the trap locations. There is always the possibility that wild horses will be injured or killed during any phase of the gather and removal operation. Methods and procedures have been identified and refined throughout the western states to minimize stress and impacts to wild horses during implementation of wild horse gathers (Appendix A and B).

Most injuries are sustained once the horse has been captured and is either within the trap corrals or holding corrals, or during transport between the facilities and during sorting. These injuries result from kicks and bites, and from animals making contact with corral panels or gates. Transport and sorting is completed as quickly and safely as possible to reduce the occurrence of fighting and move the horses into the large holding pens to settle in with hay and water. Injuries

received during transport and sorting consist of superficial wounds of the rump, face, or legs. Despite precautions, occasionally a wild horse will rear up or make contact with panels hard enough to sustain a fatal neck break, though such incidents are rare. There is no way to reasonably predict any of these types of injuries. On many gathers, no wild horses are injured or die. On some gathers, due to the genetic background of the horses they are not as calm and injuries are more frequent. Overall, however, injuries and death are not frequent and usually average less than 0.5%.

During the actual herding of horses with a helicopter, injuries are rare, and consist of scrapes and scratches from brush, or occasionally broken legs from horses stepping into a rodent hole. Serious injuries requiring euthanasia could occur in 1-2 horses per every 1000 captured based on prior gather statistics.

All mares released to the HMA over 2 years of age, would receive a single-doze of the two-year PZP contraceptive vaccine. When injected, PZP (Antigen) causes the mare's immune system to produce antibodies and these antibodies bind to the mare's own eggs, and effectively block sperm binding and fertilization (Zoo Montana, 2000). PZP is relatively inexpensive, meets the BLM requirements for safety to mares and environment, and can be administered in the field. In addition, among mares, PZP contraception appears to be completely reversible.

The highest success for fertility control has been achieved when applied during the timeframe of November through February. The efficacy for the application of the two-year PZP vaccine based on fall application (July to October) is as follows: Year 1 – Normally foal, Year 2 – 80%, Year 3 – 65%, and Year 4 – 50% (Kirkpatrick 2006).

This one time application would not affect normal development of the fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no apparent effects on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Therefore, no long term impact is expected from the application of PZP.

The injection would be controlled, handled, and administered by a trained BLM employee. Mares receiving the inoculation would experience slightly increased stress levels from increased handling while being inoculated and freeze branded. Injection site injury associated with fertility control treatments is extremely rare in treated mares, and may be related to experience of the administrator. Any direct impacts associated with fertility control would be minor in nature and of short duration. The mares would quickly recover once released back into the HMA.

The use of fertility control would allow select wild horse mares an opportunity to achieve improved body condition until their next foaling and potential to realize a greater life span on their home range within the HMA due to fewer gather operations based on herd recruitment.

Alternative A would involve the release of some captured wild horses back into the HMA to achieve a post-gather population of 60% studs and 40% mares. Under this alternative 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. These effects would be slight, as the proposed sex ratio is not an extreme departure from normal sex ratio ranges. Modification of sex ratios for a post-gather population favoring studs would further reduce growth rates in combination with fertility control.

Under the Proposed Action nearly all foals gathered would be approximately five months of age or older and may be ready for weaning from their mothers. Fall and winter time-frames are much less stressful to foals than summer gathers. Not only are young foals in summer months more prone to dehydration and complications from heat stress, the handling, sorting and transport is a stress to the young wild horses and increases the chance for them to be rejected by their mothers. By gathering wild horses during the fall and winter, stress associated with summer gathers is reduced.

Following a complete gather of all wild horses from the analysis area, the BLM would carefully select wild horses which would be returned to the HMA to ensure a healthy genetically diverse herd. Based on a selective removal the BLM would not select wild horses, which exhibit signs of chronic lameness due to the enlarged knee condition, to be returned to the HMA.

4.4.6 EFFECTS ON CULTURAL AND PALEONTOLOGICAL RESOURCES

Cultural

Archaeological sites are vulnerable to a number of impacts as a result of wild horse activity. In areas where wild horses concentrate or trail, sites are at risk from trampling. Wild horses trail to water sources and foaling areas, and congregate at thermal cover locations to avoid intense summer heat or gain shelter from intense winter cold conditions. Trampling can cause horizontal movement of artifacts when items encapsulated in mud adhere to wild horse hooves, can crush and break artifacts, and can churn up the soil, destroying the site context. Wild horses can rub and scratch on standing features such as wickiup and structural poles, knocking these items down. Loosing these elements hastens the collapse of architectural features such as prehistoric masonry walls, wickiups, and homestead cabins. If the vegetation cover is reduced significantly by trampling, or overall grazing, the loosened and unprotected soil is more susceptible to wind and water erosion which can also destroy overall site contexts by eliminating the vertical spacing that might indicate change through time. The loss of site contextual data is permanent and irreversible and causes a loss of scientific data regarding the human use and adaptation to the area over time.

Reduction of wild horses to the low end of the AML and initiating immunocontraceptive fertility control will serve to reduce the numbers of wild horses. Reducing wild horse numbers will reduce the impacts associated with their activities, such as those listed above, and will serve to help extend the time that sites are protected by these reduced numbers.

Constructing trap sites would cause damage to archaeological resources if traps were built on them, due to the ground disturbance caused both by fence construction and trampling of wild horses being herded into traps, as well as once they are in the traps. Therefore, all trap locations and holding areas will be surveyed prior to use if they have not been previously. However,

herding wild horses via helicopter is not a precise process and it is possible that wild horses might trail through sites as they are herded to these trap locations. If the wild horses are moving at a trot or cantor the force of hoof strikes will be higher than if wild horses are just walking and could cause deeper and more extensive disturbance of site contexts along with crushing or breaking of artifacts.

All impacts to cultural resources are permanent and irreversible and cause a loss of scientific data regarding the human use and adaptation to the area over time.

Paleontology

Reduction of the numbers of wild horses to the lower end of the AML and implementation of fertility control would significantly reduce the overall damage to exposed fossils by limiting the opportunity for concentrations of wild horses to occur on exposed localities with the attendant trampling, crushing and displacing of the fossils. A reduction in the rate at which the herd grows extends the time span where exposed fossils are protected from higher concentrations of wild horses that could potentially cause damage from trampling.

Fossils could be impacted by gather operations if trap sites and associated wing fences or holding facilities are located in known and reported fossil localities. Historic trap sites have been inspected to insure placement on vegetated soils with no exposed bedrock where fossil resources would be likely. Careful setting of trap sites and holding facilities limits the damage to exposed fossils and fossil localities, so any future trap locations will be inspected for fossil location possibility.

Herding wild horses via helicopter is not a precise undertaking and it is possible that wild horses may trail across exposed outcrops of fossil bearing stone as they travel to trap sites or roping areas. There is the potential to damage or destroy some fossil resources as the wild horses trail across the formation, particularly if the rock surface is weathered and soft and the wild horses travel through at a rate of speed greater than a walk.

Loss of fossil specimens due to crushing or erosion is an irreversible, permanent loss of scientific data.

4.4.7 EFFECTS ON AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Potential impacts to paleontological resources, such as those within the Coal Draw ACEC, are described in the Paleontology section above. Potential impacts to cultural resources in the Duck Creek ACEC are analyzed in the Cultural Resources section above. Impacts to the rare plant resources in the Duck Creek, South Cathedral Bluffs, Upper and Lower Greasewood ACECs could also occur, such as trampling as wild horses are herded through special status plant species habitat to a trap. The reader is referred to the Special Status Plant discussion above for impact discussion. The BLM will not locate any traps within ACECs.

4.4.8 EFFECTS ON RECREATION

If helicopter wild horse gather operations coincide with big game hunting seasons, it is likely that conflict between public land hunters and the gather operations will develop. Gather operations may disrupt public land hunters to a degree that the recreational activity, in this case upland big game hunting, may not be able to occur within the areas helicopter gather operations impact the White River ERMA. This would represent a negative impact on the recreational hunting experience. Big game hunting on public lands contributes to the local economy during big game hunting season. The WRFO manages 10 Special Recreation Permits (SRP) within the analysis area solely for commercially guided big game hunting activities on BLM lands. Clients for these guides and outfitters come from all over the United States to hunt the Game Management Units (GMUs) within the WRFO. Costs for a 5 day elk hunt during this period average approximately $3500. Additionally, countless other hunters operating privately without the services of guides and outfitters also hunt GMUs within the WRFO. These hunters provide a direct revenue stream into local economies through spending on lodging, fuel, food, supplies, licenses, and other indirect expenditures.

The reduction of horses would make observing and enjoying wild horses more difficult. Individuals well versed in local wild horse habitat and distribution would probably retain their ability to locate and enjoy the HMA herd, but people less familiar with the area would be less likely to locate and enjoy the wild horses. There is very little data regarding the number and frequency of recreational viewing of wild horses within the HMA, but a number of individuals make use of the HMA to view and photograph wild horses. There are currently no SRP's or film permits that have been issued for the commercial sale of wild horse photos within the HMA.

4.4.9 EFFECTS ON NOISE

All of the areas identified for gather would be temporarily affected by noise associated with helicopters and increased vehicular traffic. All impacts resulting from noises during gather operations are short term in nature and would not continue once gather operations are completed.

The initial gather would be expected to take as long as 11 days to complete (September 20 to September 30). During this time, the gather helicopter would be operating daily in specific locations within the areas identified for wild horse capture. The helicopter would not remain in any given location for long durations of time; rather the noise associated with helicopter use would be intense, isolated and short-lived between one trap location and another.

Vehicular traffic in the form of motor vehicles and equipment pulled by these motor vehicles would occur in locations within the gather area. Again, this activity would focus in locations where wild horses are being captured and would shift from location to location on an almost daily basis.

4.4.10 EFFECTS ON WASTES, HAZARDOUS AND SOLID

Helicopter refueling will be necessary during gather operations. Helicopter refueling usually takes place on county roads, holding facilities, and staging areas so that a fuel vehicle is able to reach the helicopter. Refueling operations could present a hazard if a spill occurs. The contractor would have absorbents onsite for spill containment and would report spills to the proper agencies. After cleanup is complete, the spilled substance(s) and materials used for cleanup would be removed from the project area and disposed of at an approved disposal facility.

Needles used to treat wild horses during the gathers could present a hazard to public safety if not disposed of properly. However, all needles will be disposed of by the contract veterinarian off site in a proper disposal facility.

4.4.11 EFFECTS ON SOCIOECONOMICS

Gather operations are so transient in nature, only being within Rio Blanco County for less than a month, BLM does not anticipate direct socio-economic impacts would be measurable. However, indirect impacts may result from impacts to other economic features. Timing of gather operations during hunting seasons may adversely affect or displace hunters which bring a large direct revenue stream into the local economy (i.e. spending on lodging, fuel, food, supplies, licenses, and other indirect expenditures). Based on the timing of the gather it is anticipated that these impacts would be avoided since the gather would more than likely impact a small number of local archery hunters whose familiarity with the region would be expected to avoid gather operations.

The BLM expects there will be a reduction in the amount of revenue generated from the recreational viewing.

The HMA contains a number of County and BLM roads. Travelers in the area may experience in a short increase in area traffic due to gather operations, and small delays in traffic to allow for fueling of helicopters, and other gather operations. These impacts would not measurably exceed those affects that are currently ongoing due to existing oil and gas uses of these roads.

4.4.12 CUMULATIVE IMPACTS (ALTERNATIVE A)

GENERAL

Gather operations within the WRFO have on average, been completed every 4 to 5 years. Under this alternative the frequency of future gathers is anticipated to be extended in duration.

SOIL, WATER AND AIR: Soil Resources, Water Resources, Air Quality

The Cumulative Analysis Area (CAA) for soil, water and air is the HMA and immediately adjacent areas affected by wild horses where gathers could occur. Implementation of the Proposed Action along with all existing land uses in the project area would not likely lead to any soil condition which would lead to further degradation or which would not improve naturally.

Oil and gas development activities, livestock grazing and recreation are the reasonably foreseeable activities that would contribute to impacts to water resources in this area. New oil and gas development is likely within the Yellow Creek and Piceance Creek watersheds especially and there is historical oil and gas development in East Douglas that would continue. This oil and gas development will include the installation of pipelines, building well pads and access roads and infrastructure to develop natural gas and oil shale resources. Surface disturbance and the loss of forage will increase the impact of wild horses on the landscape. Livestock grazing will result in similar impacts as those described for wild horses. Recreation impacts will continue to occur from vehicle travel on existing roads and trails. The Proposed Action will allow for the removal of excess wild horses which would not lead to an exceedance in water quality standards.

Oil and gas development activities, livestock grazing and recreation are the reasonably foreseeable activities that would contribute to dust production in this area. Vehicle trips along dirt roads to access these sites are the primary cause of dust production from oil and gas activities. Livestock grazing results in similar impacts as those described for wild horses with dust production due to hoof action and greater during times of the day when cattle or sheep are moving from water, food and shelter sources. Recreation impacts are most likely from vehicle travel on existing roads and trails. During exceptionally dry times the cumulative impacts from these activities would result in visible dust and reduce visibility and may contribute to regional air quality events mostly due to fugitive dust. These impacts are expected to be temporary and would not likely exceed the National Ambient Air Quality Standard (NAAQS) for PM_{10} (24-hour average of dust particles less than 10 microns) of 150 $\mu g/m^3$ (micrograms per meter cubed).

VEGETATION RESOURCES

Cumulative impacts to vegetation resources under the Proposed Action would be similar to those identified below for terrestrial wildlife.

WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Wildlife, Terrestrial: The CAA for terrestrial wildlife encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. Alternative A would provide broad relief from inappropriate levels, duration, and timing of forage use by excess numbers of wild horses, as well as the progressive and long-term deterioration of native ground cover as important forage and cover constituents of shrub-steppe wildlife habitats. The contribution of wild horse-related grazing effects at post-gather populations on herbaceous forage and cover conditions would be integral with those effects attributable to other wild and domestic ungulates. Collective ungulate grazing-related effects on native vegetation communities would be additive with vegetation clearing and occupation associated with past and ongoing mineral development and the proliferation of invasive and noxious weeds in the Piceance and Douglas/Evacuation

Creek Basins within Colorado. (See Table 4-1).

Migratory Birds: The CAA for migratory birds encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. The contribution of grazing influences attributable to wild horses within the HMA at AML has been accepted in a multiple use context. Wild horse populations that exceed AML or become established outside the HMA, contribute to the cumulative deterioration of migratory bird nesting habitat in the Piceance and Douglas Creek Basins generated by natural gas development (direct occupation and clearing) and acreage increasingly influenced by invasive annual grasses and noxious weeds. The collective influence of wild horses at AML within the HMA is not expected to compromise the viability or appropriate distribution of any migratory bird population at the scale of the Piceance and Douglas watersheds (See Table 4-1).

Threatened, Endangered and Sensitive Animal Species: The CAA for threatened, endangered and sensitive wildlife species encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. The contribution of grazing influences attributable to wild horses within the HMA at AML has been accepted in a multiple use context. As conditioned, gather operations that remedy the consequences of wild horse populations that exceed AML or that become established outside the HMA are consistent with the maintenance or restoration of special status species habitat in the Piceance and Douglas Creek Basins. The collective influence of wild horses at AML within the HMA is not expected to compromise the viability or appropriate distribution of any special status animal population at the scale of the Piceance and Douglas watersheds (See Table 4-1).

Wildlife, Aquatic: The CAA for aquatic wildlife encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. The contribution of grazing influences attributable to wild horses within the HMA at AML has been accepted in a multiple use context. As conditioned, gather operations that remedy the consequences of wild horse populations that exceed AML or that become established outside the HMA are consistent with the maintenance or restoration of special status species habitat in the Piceance and Douglas Creek Basins. The collective influence of wild horses at AML within the HMA is not expected to compromise the viability or appropriate distribution of any aquatic wildlife population at the scale of the Piceance and Douglas watersheds (See Table 4-1).

LIVESTOCK GRAZING

The CAA for livestock grazing includes all grazing allotments administered by the WRFO within the analysis area. Table 4-1 provides a list of cumulative activities that have or have the potential to affect livestock grazing through the removal of vegetative communities, and change of vegetative composition. Implementation of the Proposed Action would not result in changes of these impacts to livestock grazing within the analysis area.

WILD HORSES

The cumulative analysis area (CAA) for wild horses includes the HMA and areas outside of the HMA where wild horses are known to occur.

Cumulative Impacts common to Alternatives A include impacts resulting from previous, current, and future gathers to maintain the wild horse populations within the identified AML and continue to maintain a thriving natural ecological balance. Other cumulative impacts to wild horses within the HMA would include prolonged periods of drought, competition for limited water and forage, wildland fire, livestock operations, vehicular traffic, and continued energy exploration/development. The impacts to wild horses resulting from these cumulative impacts have and will continue to affect wild horse proportionately to the fluctuations of populations within the HMA. However, by maintaining the populations within AML for the HMA the habitat area per horse is increased, allowing wild horses to avoid these impacts.

CULTURAL RESOURCES AND PALEONTOLOGY

Cultural Resources- The CAA for cultural resources is the HMA and areas adjacent where wild horses are known to occur. There will continue to be cumulative impacts to cultural resources due to the presence of wild horses in the area, on top of sheep and cattle grazing, energy developments, fire, and wildlife. The impacts described in the above Cultural Resources section, such as increased wind and water erosion, trampling and so on will continue. As long as there are wild horses, there will continue to be wild horse related impacts which are cumulative and irreversible.

Paleontological Resources- The CAA for paleontological resources is the HMA and any adjacent areas where wild horses are known to occur. For Alternative A, overall impact from wild horses would be slowed or reduced as horse numbers are reduced. Keeping horse numbers at the lower end of the AML reduces the rate of loss of fossil resources. Removal of wild horses from areas outside the HMA could reduce or eliminate the loss of paleontological resources.

However, there will continue to be a cumulative long term loss or fossil resources due to the presence of wild horse in the area, in addition to any losses associated with the continued grazing associate with cattle, sheep and large grazing wildlife populations. Loss from trampling rubbing of vertical surfaces and erosion from reduction of vegetation cover will continue. The losses of fossil resources are cumulative and irreversible.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The BLM did not identify cumulative impacts for this resource.

RECREATION

Due to the extended timeframe anticipated between gathers the likelihood of the WRFO having to schedule a gather during a hunting season or other heavily attended recreational event would be reduced.

NOISE

The CAA for noise would be limited to a 1-mile buffer of the analysis area. Within this area are a number of additional noise sources. Noise sources include energy exploration and development vehicle traffic, drilling activities, livestock operations vehicle use, seismic activities, the occasional pipeline aircraft flights, and noise generated from various pipeline compressor stations. The impacts from these sources are similar to the noise impacts of the Proposed Action and are perhaps intense and constant, but they quickly dissipate as one moves away from the source. In addition, they are only short term affects and disappear with the generating object. Several are, however, long-term and have increased the amount of noise impacts to the region. While this is an additional increase in overall noise within the analysis area the BLM anticipates it will be of short localized duration and will not substantively increase long term noise sources.

WASTES, HAZARDOUS AND SOLID

The CAA for wastes, hazardous and solid is the HMA and immediately adjacent areas affected by wild horses where gathers could occur. New oil and gas development in the area is reasonably foreseeable, especially within the Yellow Creek and Piceance Creek watersheds and there is historical oil and gas development in East Douglas. This oil and gas development will include the installation of pipelines, building well pads and access roads and infrastructure to develop natural gas and oil shale resources. These activities would generate, use and store hazardous chemicals and will generate solid wastes. Since no hazardous or solid wastes would be generated under this alternative, this action will not contribute additional impacts to the development expected.

SOCIOECONOMICS

Impacts would be similar to those under the recreation section above.

4.5 ALTERNATIVE B - Gather and Removal of Excess Wild Horses to Low End of AML.

4.5.1 EFFECTS ON SOIL, WATER & AIR

Soil Resources

Direct and indirect impacts from the gathering activities as well as overall population impacts would be the similar as those described for the Proposed Action. Long-term impacts from horse grazing and trailing are expected to grow at a faster rate as compared to the Proposed Action without the additional population controls.

Water Resources

Direct and indirect impacts from the gathering activities as well as overall population impacts would be the similar as those described for the Proposed Action, but without contraceptive use

and sex ratio adjustments gather operations would need to be scheduled more frequently (e.g., every 3 years). Long-term impacts from horse grazing and trailing are expected to grow at a faster rate as compared to the Proposed Action without the additional population controls.

Impacts to water resources would be similar to the Proposed Action except for the adjustment of sex ratios would not occur and wild horse population growth rates would be higher under this alternative. Short term impacts from the gathering activities would be the same as the Proposed Action, but without contraceptive use and sex ratio adjustments gather operations would need to be scheduled more frequently (e.g., every fourth year). However, long-term impacts from horse grazing and trailing are expected to grow at a faster rate as compared to the Proposed Action and result in accelerated impacts.

Air Quality

Short term impacts from the gathering activities would be the same as those described for Proposed Action. Long-term impacts from wild horse grazing and trailing are expected to grow at a faster rate as compared to the Proposed Action. However, this alternative is also not likely to exceed the western Colorado dust standard and regional air quality is expected to benefit from the reduction of wild horse herd numbers.

4.5.2 EFECTS ON VEGETATION RESOURCES

General Vegetation

Impacts to vegetation under this alternative would be similar to those of the Proposed Action. The wild horse population would be reduced in order to maintain a TNEB, and avoid unnecessary transitions to less desirable vegetation communities within important ecological sites within the HMA which provide valuable forage to wild horses, livestock and wildlife. Under this alternative, the time between gathers necessary to maintain the wild horse population within the AML would likely be shortened, reducing the recovery time for vegetation at trap sites which are re-utilized during cyclical gather operations, however, under this alternative, disturbed vegetation would likely have adequate opportunity for recovery.

Noxious Weeds

Impacts from soil disturbance associated with gather activities under this alternative would be similar to those impacts identified under the Proposed Action.

Wetland-Riparian

Impacts would be similar to the Proposed Action, because WRFO would continue to gather excess wild horses when the population has exceeded the AML; long term improvements to wetland and riparian zones from reducing the wild horse population would be similar to the Proposed Action.

Special Status Species

Under this alternative, the impacts will be the same as the Proposed Action.

4.5.3 EFFECTS ON WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Wildlife, Terrestrial, Wildlife Aquatic and Special Status Species

Gather strategies associated with this alternative would have the same grazing-related influences on terrestrial wildlife groups and habitats as the Proposed Action, but without contraceptive use and sex ratio adjustments gather operations would need to be scheduled more frequently (e.g., every 3 to 4 years). Alternative B, then, would tend to abbreviate grazing effects associated with consecutive years at the higher end of AML (e.g., exceeding the AML midpoint of 185 head: 2 years versus 3 to 4 years under Alternative A), but with higher recruitment rates and the need for more frequent gathers, Alternative B may be expected to remain prone to less reliable gather regimens and more intense and widespread grazing effects attributable to instances when wild horses disperse beyond the HMA and/or exceed AML within the HMA.

Migratory Birds

Under this alternative, the impacts will be the same as the Proposed Action. Gather-related impacts would have no direct impacts to migratory bird nesting activities as they will take place outside of the breeding window.

4.5.4 EFFECTS ON LIVESTOCK GRAZING

Impacts would be the same as in the Proposed Action, however, wild horse populations may increase at a faster rate and exceed the high end of the AML range sooner than under the Proposed Action.

4.5.5 EFFECTS ON WILD HORSES

Impacts resulting from this alternative are essentially the same as those of the Proposed Action with the exception that mares would not undergo the additional stress of receiving fertility control injections and freeze branding. Population modeling shows that the average number of animals needing to be removed over the modeling period is approximately 10% less under the Proposed Action due to the application of fertility control treatment and the modified sex ratios. The herd growth rates under this alternative would be higher than those under the Proposed Action. This would result in a gather schedule to maintain a wild horse population within AML every 3 to 4 years.

Under Alternative B the BLM anticipates there would be no change to the growth rate or the

population dynamic within the HMA. Based on WinEquus (Appendix E) population model runs, BLM anticipates the growth rate within the HMA would remain the same as currently being observed. Under this alternative, the potential for entire localized bands within geographic ranges could be removed, until those geographic ranges become repopulated by wild horses displaced from surrounding home ranges as those bands grow and expand.

4.5.6 EFFECTS ON CULTURAL AND PALEONTOLOGICAL RESOURCE

Cultural

Horse related impacts would be similar to those discussed in Proposed Action. The decrease in wild horse numbers, and the related reduction of wild horse related impacts would be shorter-lived with Alternative B, as herd numbers are anticipated to reach the high end of AML sooner since fertility control vaccines would not be administered.

Paleontology

Impacts would be similar to the Proposed Action except that not implementing the fertility control or the sex ratio adjustment along with the wild horse removal would shorten the time exposed fossils are protected.

4.5.7 EFFECTS ON AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Same as the Proposed Action.

4.5.8 EFFECTS ON RECREATION

The consequences of this alternative are expected to be similar to those of the Proposed Action with the exception that under this alternative future gathers will be carried out more routinely, thereby decreasing the time between gathers. However, because the number of wild horses to be captured in any given year would require less actual gather operations (i.e. 5 days versus 10 days). This decrease in the time would help to reduce exposure times of the gather operations to the public, primarily hunters, thereby decreasing the potential for conflicts.

4.5.9 EFFECTS ON NOISE

Similar those identified for recreation above.

4.5.10 EFFECTS ON WASTES, HAZARDOUS AND SOLID

Impacts would be the same as those described in the Proposed Action, except there would be no need for fertility control and therefore fewer needles would be required.

4.5.11 EFFECTS ON SOCIOECONOMICS

Same as the Proposed Action.

4.5.12 CUMULATIVE IMPACTS (ALTERNATIVE B)

Gather operations within the WRFO have on average been completed every 3 to 4 years. Under this alternative the general rate and need for future gathers would remain unchanged.

SOIL, WATER AND AIR

Cumulative impacts for Alternative B will be identical to those described in Alternative A with exception of having more gathers into the future as compared to the Proposed Action.

VEGETATION RESOURCES

Cumulative impacts to vegetation resources under the Alternative B would be similar to those identified below for terrestrial wildlife.

WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Terrestrial Wildlife: The CAA for terrestrial wildlife encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. Alternative B would provide broad relief from inappropriate levels, duration, and timing of forage use by excess numbers of wild horses, as well as the progressive and long-term deterioration of native ground cover as important forage and cover constituents of shrub-steppe wildlife habitats. The contribution of wild horse-related grazing effects at post-gather populations on herbaceous forage and cover conditions would be integral with those effects attributable to other wild and domestic ungulates. Collective ungulate grazing-related effects on native vegetation communities would be additive with vegetation clearing and occupation associated with past and ongoing mineral development and the proliferation of invasive and noxious weeds in the Piceance and Douglas/Evacuation Creek Basins within Colorado. (See Table 4-1).

Migratory Birds: The CAA for migratory birds encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. The contribution of grazing influences attributable to wild horses within the HMA at AML has been accepted in a multiple use context. Wild horse populations that exceed AML or become established outside the HMA, contribute to the cumulative deterioration of migratory bird nesting habitat in the Piceance and Douglas Creek Basins generated by natural gas development (direct occupation and clearing) and acreage increasingly influenced by invasive annual grasses and noxious weeds. The collective influence of wild horses at AML within the HMA is not expected to compromise the viability or

appropriate distribution of any migratory bird population at the scale of the Piceance and Douglas watersheds (See Table 4-1).

Threatened, Endangered and Sensitive Animal Species: The CAA for threatened, endangered and sensitive wildlife species encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. The contribution of grazing influences attributable to wild horses within the HMA at AML has been accepted in a multiple use context. As conditioned, gather operations that remedy the consequences of wild horse populations that exceed AML or that become established outside the HMA are consistent with the maintenance or restoration of special status species habitat in the Piceance and Douglas Creek Basins. The collective influence of wild horses at AML within the HMA is not expected to compromise the viability or appropriate distribution of any special status animal population at the scale of the Piceance and Douglas watersheds (See Table 4-1).

Wildlife, Aquatic: The CAA for aquatic wildlife encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. The contribution of grazing influences attributable to wild horses within the HMA at AML has been accepted in a multiple use context. As conditioned, gather operations that remedy the consequences of wild horse populations that exceed AML or that become established outside the HMA are consistent with the maintenance or restoration of special status species habitat in the Piceance and Douglas Creek Basins. The collective influence of wild horses at AML within the HMA is not expected to compromise the viability or appropriate distribution of any aquatic wildlife population at the scale of the Piceance and Douglas watersheds (See Table 4-1).

LIVESTOCK GRAZING

Cumulative impacts would be similar to those under Alternative A.

WILD HORSES

Cumulative impacts under Alternative B are similar to those of Alternative A. However, under this alternative no selective removal would be completed, which over time could result in impacts to the overall health of the wild horse herd.

CULTURAL RESOURCES AND PALEONTOLOGY

Cultural Resources- The CAA for cultural resources is the HMA and areas adjacent where wild horses are known to occur. For Alternative B, the cumulative impacts would be similar to Alternative A. In the short term, impacts to cultural resources would be reduced as wild horse numbers are reduced to the minimum AML numbers. However, the reductions would only be short term in nature. As wild horse numbers increase above approved AML numbers between gathers the impacts inside the HMA will continue. As long as there are wild horses, there will continue to be wild horse related impacts which are cumulative and irreversible.

Paleontological Resources- The CAA for paleontological resources is the HMA and any adjacent areas where wild horses are known to occur. For Alternative B overall impact from wild horses

would be slowed or reduced as horse numbers are reduced. Keeping horse numbers at the lower end of the AML reduces the rate of loss of fossil resources. Removal of wild horses from areas outside the HMA could reduce or eliminate the loss of paleontological resources.

However, there will continue to be a cumulative long term loss or fossil resources due to the presence of wild horse in the area, in addition to any losses associated with the continued grazing associate with cattle, sheep and large grazing wildlife populations. Loss from trampling rubbing of vertical surfaces and erosion from reduction of vegetation cover will continue. The losses of fossil resources are cumulative and irreversible. Impacts are generally similar to A except the rate is reduced in relation to the reduction in numbers of wild horses inside and outside the HMA.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The BLM did not identify cumulative impacts for this resource.

RECREATION

Under Alternative B the overall potential for increased impacts to recreation resources result from future gathers being scheduled during hunting seasons is maintained due to the increased gather frequency (i.e. a gather every 3 to 4 years).

NOISE

Cumulative affects to noise resources would be similar to those under Alternative A.

WASTES, HAZARDOUS AND SOLID

Cumulative impacts for Alternative B will be identical to those described in Alternative A with exception of increased gather frequency.

SOCIOECONOMICS

Cumulative affects to socioeconomic resources would be similar to those under recreation.

4.6 ALTERNATIVE C - Allow the Wild Horse Population to Increase, while Reducing Livestock Grazing within the HMA - Gather only Excess Wild Horses which are Located Outside of the HMA.

4.6.1 EFFECTS ON SOIL, WATER & AIR

Soil Resources

Impacts from the gathering activities would be the same as those described for the Proposed Action, but would not occur in the HMA until horse levels reached the AUM threshold.

Livestock grazing is prescribed grazing management which addresses rangeland health and environmental conditions and allows rangeland specialists and livestock operators to reduce density, change duration, graze less than the allowed preference, and other adjustments that can be used to address drought conditions, changes in available forage or other factors. Wild horse management does not allow for changes in grazing to be used to address environmental conditions and therefore would likely result in more impact to soil resources as horse numbers grow.

Additional impacts occur from yearlong use by wild horses as opposed to the limited duration that typically occurs with livestock, due to pasture rotation and grazing management objectives. Due to increased populations of wild horses grazing during primary the growing season, potentially no opportunities for rest periods, and wild horses in pastures during wetter periods would result in increased impacts to soils resources as compared to Alternative A. Long-term impacts from wild horse grazing and trailing would be proportional to the increased horse herd population.

The vegetation section discusses a transition from desirable Wyoming/mixed grass vegetation communities to the least desirable cheat grass dominated communities. These cheat grass dominated communities tend to have more annuals with less developed root systems and cause increased surface runoff due to more bare ground. Less developed root systems and increased surface runoff would decrease the stability of soils where this transition occurs and erosion would be dramatic, especially when these areas correspond to sensitive soils.

The range conditions within the HMA will likely begin to show signs of deterioration as the population of wild horses begins to near carrying capacity. This could increase the amount of vegetation removal that is necessary for soil productivity and soil stability. While the BLM is able to determine the appropriate carrying capacity areas will deteriorate to a point where erosion and topsoil loss could be dramatic. This impact is more likely in fragile and saline soils. Since impacts can be expected in areas with generally poor soils, impacts would likely exceed Public Land Health Standard for Upland Soils under this alternative.

Water Resources

Short term impacts from the gathering activities would be the same as those described for the Proposed Action outside the HMA. Gathering would not occur in the HMA until population levels reached the AUMs allocated and then impacts from gathering activities would be similar to Alternative A. Grazing impacts from wild horses would be greater as described in the soil resources section due to yearlong use and less flexibility with grazing management. More impacts from trailing, concentrated use and grazing would tend to increase salt and sediment loading in surface waters. Long-term impacts from wild horse grazing and trailing are expected to be higher and grow at a faster rate as compared to the Proposed Action. These impacts will be proportional to wild horse herd growth.

Long-term impacts from wild horse grazing and trailing are expected to grow at a faster rate as compared to the Proposed Action and therefore result in more impacts to the hydrology of surface water features and springs.

Air Quality

Impacts to air quality would be similar to the Proposed Action except more impacts to soil resources are expected under this alternative and therefore dust production from trailing and grazing is expected to be higher. Dust generation during gathering activities would be similar, but due to more frequent gathers in the HMA after the horse herd population reaches the allocated AUMs, impacts would then be more frequent. However, this alternative is also unlikely to exceed the western Colorado dust standard.

4.6.2 EFECTS ON VEGETATION RESOURCES

General Vegetation

Under this alternative, the BLM would incrementally reduce livestock grazing within the HMA as the wild horse population increases in order to maintain a TNEB and avoid overutilization of vegetation. There would be no impacts to vegetation as a result of gather activities inside of the HMA. Vegetation disturbances associated with gather activities outside of the HMA would be identical to those described in Alternatives A and B. Initially livestock AUMs would be transitioned straight across to season long wild horse AUMs, under this alternative it would be necessary for BLM to determine the carrying capacity of the HMA under season long grazing rather than prescribed seasonal grazing by livestock. Because the current stocking rate of livestock is based on seasonal use, key species can withstand higher levels of utilization while providing for adequate regrowth and recovery periods to maintain plant vigor, and continue to meet rangeland health standards. The carrying capacity of rangelands is reduced under season long grazing due to the lack of deferment from grazing to provide regrowth opportunity. The amount of AUMs for wild horses which the HMA could support under this alternative is likely less than the current allocated AUMs for livestock and wild horses, due to yearlong use by wild horses rather than prescribed seasonal use.

Until BLM is able to establish the proper carrying capacity and AML within the HMA for wild horse grazing only to maintain TNEB, it is expected that some areas will receive heavy continuous season long grazing, especially those areas close to water and easily accessible. Key vegetation species in these areas, particularly the cool season bunchgrasses will likely begin to incur utilization levels above the 40% threshold under yearlong grazing necessary to withstand grazing pressure, and persist within a community. As the wild horse population increases within the HMA, and the level of yearlong use increases, many range sites will begin to transition to less desirable plant communities unless the level of season long use is reduced. As stated in the wild horse section of this document, once the wild horse population reaches the level of allocated forage within the HMA, annual gathers would be necessary to reduce the amount of use on vegetation within the HMA. Under this scenario, there is not a range for the AML, and wild horses would be continually maintained at the maximum level of current allocated forage, this would not allow for periodic reduced utilization for plant recovery and recruitment. Also under this alternative, because it would become necessary to conduct annual gathers, trap sites and holding facilities would be consistently re-used, resulting in permanent disturbance and removal of vegetation at those sites. Also under this alternative, the BLM would be unable to timely remove or reduce grazing within the HMA if necessary to protect rangeland health such as during drought, or following wildfire.

It is expected that vegetation communities outside of the HMA would benefit from the elimination of season long use, resulting in an increase in both cover and production.

Noxious Weeds

Establishment and proliferation of noxious weeds would continue to be a concern within the HMA. Until the BLM is able to establish the appropriate AML within the HMA with the absence of livestock grazing, native vegetation communities degraded by heavy continuous season long grazing under this alternative would be susceptible to invasion by noxious weeds, especially cheatgrass, houndstongue, hoary cress, and the knapweeds. As livestock is removed from the HMA, the BLM would no longer have the cooperation and support of grazing permittees in efforts to control or eradicate noxious weeds from areas within the HMA, through reporting and/or treatment of noxious weed infestations.

Wetland-Riparian

Until the BLM determines the appropriate carrying capacity for the HMA under this alternative wetland and riparian areas which currently receive limited or seasonal use would begin to incur yearlong use. Under this alternative, the opportunity for severe grazing, or overgrazing of riparian vegetation is increased due to yearlong grazing. As these plants are overgrazed, the plant will use more energy for leaf growth to replace photosynthetic material, and little or no energy will be used for root growth. As overgrazing continues, roots will begin to die reducing the vigor of those plants. As riparian vegetation losses vigor, it will be replaced by invasive or upland species tolerant to grazing which do not have adequate root systems to protect banks. As the stream bank vegetation is degraded, the riparian area will become wide and shallow, which also results in a lower water table. Without the opportunity for deferment and rest, riparian systems within the HMA will be at risk to become non-functioning, and may be lost. There would be no impacts to riparian areas as a result of gather operations.

Special Status Species

Under this alternative, there would be no impacts to special status plant species as a result of gather operations.

Although the current foraging of shale barren plant habitats by wild horses is generally low throughout the herd area, continued increase of wild horse numbers could result in trampling or foraging of special status plant species and unique vegetation sites, especially during drought when overall forage is limited. Under this alternative, adverse impacts to special status plant species, unique and remnant vegetation would be expected to increase as the grazing pressure for available forage increases especially under drought conditions

4.6.3 EFFECTS ON WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Wildlife, Terrestrial

Wildlife-related consequences of year-long grazing practices attributable to higher density wild horse populations are addressed elsewhere in this section (see *Threatened, Endangered, and Sensitive Animal Species* section and *Migratory Bird* section. Additionally, discussions

pertaining to dusky grouse in Alternative D, *Wildlife Terrestrial* section are relevant and pertinent to this section. See Alternative A, *Wildlife Terrestrial* section for discussions regarding gather operations outside the HMA).

Under Alternative C, the wild horse population would increase as livestock numbers are incrementally reduced to maintain the allocated AUMs within the HMA. This would result in a shift in grazing use from a prescribed, seasonal grazing system to year-long grazing use by wild horses on an annual basis. As wild horses disperse in search of forage resources, there will be greater overlap on important seasonal big game ranges including 25-40% of big game summer range and up to 80% of deer severe winter ranges in the Piceance Basin, and 40-50 % of deer critical winter range in each of GMU 21 and 22 (see table in Affected Environment). Direct and indirect competitive interactions between wild horse and big game would become more extensive and intense over time, particularly on summer ranges in close proximity to water, south-facing slopes on severe and critical winter ranges, and lower-elevation sagebrush/greasewood parks and bottoms used in spring as big game follow receding snowpacks to summer range. The implications of protracted season-long herbivory on forage conditions for big game are especially pertinent on big game summer ranges and those lower elevation sagebrush park and bottomlands on big game winter ranges that are used to procure emerging growth in spring for winter recovery and gaining a nutritional status adequate for successful gestation (see discussion in Affected Environment, Big game).

Nearly all of the big game summer range is confined to Pasture C of the Square S allotment and Box Elder and Pinto Mesa pastures of the Yellow Creek allotment. By 2013, all AUMs associated with these two allotments will be attributable to wild horse use alone (i.e., all livestock removed). At this time wild horse numbers will have exceeded the upper end of AML by 75% for these two allotments. Small inclusions of mule deer severe winter range are found in the Yellow Creek, Greasewood and Cathedral Bluffs allotments. As wild horses begin to increase and expand/redistribute throughout the HMA concurrent big game/wild horse use of these ranges will likely become more intensified and concentrated for prolonged periods resulting in greater direct and indirect forage competition effects. For example, based on projected wild horse distribution in the Cathedral Bluffs allotment (Table 4-2 in *Effects on Livestock Grazing* section), wild horse numbers will have increased twentyfold from current levels by 2016 – exposing more rangeland to year-long grazing influences.

Over time, year-long grazing, which allows for little to no regrowth opportunities, vegetative conditions on preferred use sites are likely to undergo shifts in composition; from intact bunchgrass communities to communities that support more grazing tolerant species such as Sandberg or Kentucky bluegrass. As wild horse populations grow and forage conditions on preferred use and concentration areas decline, the cumulative acreage that would become subjected to concentrated year-long grazing use from wild horses are likely to become evident across up to 75,000 acres of big sagebrush and mixed shrub habitats outside the HMA and about 50,000 acres inside the HMA, accounting for about 50% of the these shrubland types in the WRFO south of the White River. To accommodate wild horse increases alone, those areas subjected to heavy or further season-long grazing use would need to expand at a calculated average rate of about 30% per year to meet the annual increase in forage demand. An example of this trend is provided by the 29 wild horses establishing use in the Cathedral Creek pasture of

the Cathedral Bluffs allotment. This dispersal from the East Douglas portion of the HMA presently exposes an additional 12,500 acres of big game summer range to the influence of season-long wild horse use.

Dusky grouse: Influences on dusky grouse and associated habitats would be similar to those discussed in Alternative D; *Wildlife, Terrestrial* section.

Annual year-long use on preferred ridgeline habitats would be expected to reduce ground cover which would adversely affect nest and brood-rearing habitats associated with the Square S (Pasture C), Yellow Creek (Box Elder pasture) and Cathedral Bluffs (Hogan and Tommy's Draw pastures) allotments. As wild horses begin to redistribute throughout the HMA, grazing use will intensify on preferred sites. Additionally, rangelands that previously experienced limited grazing influences (i.e., Cathedral Bluffs) would over time become subject to more intense and long-term grazing impacts. As livestock are reduced to accommodate for increasing wild horse numbers, a progressive shift to unregulated grazing would occur throughout the HMA. Increases in season-long use, concentrated on narrow stringers of suitable ridgeline and basin habitat would be expected to rapidly reduce the density and height of concealing interstitial cover before the onset of nesting (mid-April-early May), with increasingly severe reductions through the entire brood period. Prior to five weeks of age (about late July), grouse broods are most reliant on effective ground cover to reduce their vulnerability to exposure and predation, and are not sufficiently mobile to relocate widely in search of more adequate cover. Failure to gather excess wild horses would, by 2014, deeply compromise the utility of favored nest and early brood habitat and contribute to reductions in annual reproductive performance and recruitment across 25% of the dusky grouse habitat available in the Douglas and Piceance Basins.

Raptors and non-game wildlife: It is believed that increasing intensity and duration of yearlong, and particularly growing season-long, grazing use attributable to increasingly large and expansive wild horse populations would, by 2016, result in the widespread deterioration of ground cover conditions across 40-50% of the sagebrush and mixed shrub habitats available in the WRFO south of the White River. See further discussion on raptors in Alternative C, *Special Status Species - northern goshawk* section.

Wildlife, Aquatic

Refer to Alternative C, *Threatened, Endangered, and Sensitive Animal Species* section for detailed discussion on the project area's aquatic communities. Impacts associated with wild horse removal outside the HMA would be identical to those discussed in Alternative A, *Wildlife, Aquatic* and *Threatened, Endangered, and Sensitive Animal Species* sections.

As wild horse numbers increase forage conditions in preferred or concentration areas will begin to decline, making it increasingly necessary for wild horses to redistribute throughout the HMA in search of adequate forage resources. Areas that currently experience little to no wild horse use (e.g., portions of the Douglas Creek and lower Cathedral Creek drainages) are expected to experience increased season-long use which over time would influence the riparian character and aquatic conditions.

In those systems, such as the lower five miles of Yellow Creek and Box Elder Gulch, where wild

horse use is indicated as a factor in declining watershed or channel-specific conditions, it is likely that direct and indirect grazing-related effects would become more pronounced with time, both in reaches occupied by fish and amphibians and upstream systems that contribute to the fishery (e.g., Stake Springs, Corral Gulch, Duck Creek). The increase in wild horse numbers in addition to season-long grazing use in the Cathedral Creek drainage would increase the risk and likelihood of grazing-related effects compromising the utility and function of 6.5 miles of CRCT habitat (over 40% of occupied habitat within the WRFO). Elevated sediment levels arising from grazing-induced channel damage, by accumulating in and filling beaver ponds in these high-gradient, erosion-prone systems, would progressively accelerate the rate of dam breaches that, once beyond the capacity of the system, would result in adverse channel adjustments (both upstream and downstream in Yellow Creek, and Cathedral, Soldier and Lake Creeks) that would be largely incompatible as habitat for aquatic vertebrates (i.e., straightened, entrenched channels).

Migratory Birds

Allowing the wild horse population to increase while incrementally reducing livestock grazing would result in a progressive shift from a prescribed grazing system which allows for seasonal grazing to year-long use. Presently, about 123,300 acres (48,800 acres within HMA) of the big sagebrush and mixed shrub communities are encompassed by pastures occupied by wild horses and are subject to their grazing-related influences.

Annual year-long use within the HMA would initially result in reductions of herbaceous cover used for forage and cover resources prior to and during the nesting and brood-rearing season, particularly on ridgeline and bottomland big sagebrush and mixed shrub communities. Strong, localized reductions in the density and height of herbaceous ground cover from ungulate grazing during the nesting season can substantially (50% or more) depress nest success and/or breeding densities of, particularly, ground-nesting and near-ground nesting birds (e.g., dusky grouse, Virginia's warbler, green-tailed towhee) and would likely extend more indirectly to survival and recruitment of most shrubland birds that are insectivorous by nature (e.g., dusky flycatcher) or rely heavily on invertebrate prey to feed nestlings during brood-rearing functions (e.g., Brewer's sparrow) (Walsberg 2005, Krueper et.al. 2003). In particular, shrubland communities within two miles of water would be subject to increased herbivory during or prior to the migratory bird nesting season (April through August). Strong reductions in the density and height of herbaceous ground cover primarily attributed to wild horse grazing in the short term would be sufficient to depress nest success and/or breeding densities of shrubland associated birds (as discussed above). Because water is generally well distributed across the HMA, reductions in the availability of intervening herbaceous cover as forage and cover during nesting and the rearing of young would be evident in the short term across up to 7% of sagebrush communities within the Douglas Creek watershed (6,500 acres) and up to 26% of those within the Piceance Creek watershed (42,000 acres). Reductions in ground cover and the influences exerted on migratory bird populations would become more intensified and expansive as wild horse numbers increase and they begin to redistribute themselves across the HMA.

Over time, persistent patterns of annual growing season use on affected shrublands would continue to alter the composition of herbaceous understory communities, with increasing expression of grazing tolerant species (e.g., bluegrass species) to possible conversion to annual

(cheatgrass, mustards) dominated communities, which fail to offer comparable persistence, structure, or production as substrate for invertebrate prey and/or supplemental cover for reproductive functions. Because lands that have shifted to such states can generally produce one-quarter to one-half the herbaceous forage as lands in dominated by bunchgrass communities, wild horses and cattle (at decreasing degrees through 2015) would not only make exaggerated use of forage sources near water, but would be compelled to seek and make increasingly heavy growing season demands on forage further from water. Considering the potential for high rates of change in grazing use expression attributable to wild horses (expanse and intensity of use), it is believed that current breeding bird populations would rapidly manifest the progressive accumulation of bottomland and upland ridgeline and basin habitats in suboptimal condition by persisting at densities well below potential (e.g., 50% or less). In the context of nesting habitat, it is likely that by 2015 widespread deterioration of ground cover conditions would be evident across 40-50% of the sagebrush and mixed shrub habitats available in the WRFO south of the White River.

Loss of permittee participation in weed control would over time contribute to the proliferation of noxious weeds within and potentially outside the HMA. Similar to discussions above regarding conversion to grazing tolerant and potentially annual dominated communities, inclusions with a strong weed component provide little in the way of forage or cover resources for non-game birds and small mammals resulting in suppressed nest densities and decreased reproductive success.

See discussion regarding gather operations outside the HMA in Alternative A, *Migratory Bird* section.

Special Status Species

Aquatic species, including fish and amphibians**:** Exponential increases in wild horse populations would be sustained in the short term inside the HMA. Total forage use attributable to current wild horse numbers within the HMA (4579 AUMs) would increase at an average annual rate of about 18% through 2016. By 2016, AUMs attributable solely to wild horse will have exceeded the allotted AUMs for the HMA by 26%.

As forage conditions on preferred use and concentration areas decline from increasing and prolonged growing season use, wild horses and initially cattle would be compelled to seek forage increasingly further from water. By 2014 and under no restraint, wild horse populations associated with the HMA would require about two times the amount of forage currently consumed. Because lands in degraded ecological status (e.g., consistently preferred use areas) can generally produce one-quarter to one-half the herbaceous forage as bunchgrass dominated communities, surrounding range subject to increasingly heavy or further season-long grazing use by wild horses would need to expand at a calculated average rate of about 30% per year to meet the annual increase in wild horse numbers and forage demand.

As herbaceous ground cover and composition deteriorates due to increase in wild horse use, overland erosion rates would increase incrementally, particularly from that accumulating acreage subjected to concentrated season-long grazing use from wild horses. These lands would contribute increasingly to sediments delivered to tributaries of the lower White River and its Colorado pike-minnow critical habitat, both in rate of delivery and areal extent. Although

unlikely that excessive sediment loads in these systems would instigate chronic or widespread channel instability and bank erosion in the White River, a long term trend would be established that would eventually lead to measurable increases in sedimentation of gravel substrates as spawning sites and sources of invertebrate production (as prey), water temperature (with increased channel width and declining water depth) and reductions in the utility or availability of important channel structure such as bank undercuts, backwaters and overflow channels. If wild horses are not gathered by 2016, this alternative would have the potential to adversely influence Colorado pike-minnow critical habitat, and depending on circumstances, may prompt further Endangered Species Act consultation with the USFWS. Sediment-related impacts to the lower White River would also involve a number of BLM-sensitive fish that inhabit the lower White River, including roundtail chub, flannelmouth sucker, and bluehead sucker.

Greater sage-grouse**:** Concurrent wild horse/livestock use in Pasture C of the Square S allotment involves the entire nesting and early brood-rearing season (5/20 – 6/20), with sole wild horse use additionally occurring during the lekking, nesting (4/20 – 5/20) and late brood-rearing season (6/20 – 7/20). By 2012, it will be necessary to remove all livestock from this allotment to accommodate the increase in wild horse numbers. At this time (2012) grazing intensity from wild horse use on this pasture will have tripled. By 2016, grazing intensity attributable to wild horses will have nearly quadrupled.

Wild horse influences on sage-grouse and associated habitats (big sagebrush dominated ridgelines, mesic swales) within the Box Elder pasture of the Yellow Creek allotment would be similar to those discussed above. Concurrent wild horse/livestock use occurs during the latter portions of the brood-rearing season (early to mid-July) and extends into mid October. With sole grazing influences attributable to wild horse by 2013, grazing intensity will be nearly four times greater than proposed levels. By 2016, grazing intensity attributable solely to wild horse use within the Yellow Creek allotment by will have increased by nearly five times.

In the short term, wild horses would continue to occupy and incrementally intensify their influence on about 25% of the overall sage-grouse range associated with the PPR. As wild horse numbers increase, preferred forage resources will be used at a higher intensity with forage resources being exploited at greater distances. Shifts in herbaceous composition, particularly in heavy use areas (e.g., conversion of intact big bunchgrass communities to more grazing tolerant Sandberg bluegrass types and potentially annual dominated communities) would be expected over time due to sustained, year-long use. Progressive increases in grazing intensity concentrated on narrow stringers of suitable ridgeline and basin habitat would be expected to rapidly reduce the density and height of concealing interstitial cover at the earliest stages of nesting (late April-early May), with increasingly severe reductions through the entire brood period. Prior to five weeks of age (about late July), sage-grouse broods are most reliant on effective ground cover to reduce their vulnerability to exposure and predation, and are not sufficiently mobile to relocate widely in search of more adequate cover. As noted in Affected Environment; *Special Status Species* section, sagebrush bunchgrass plant communities provide important vertical and structural components that aid in the concealment of nesting hens and young chicks. These structural components are greatly reduced in bluegrass dominated communities.

Failure to gather excess wild horses would deeply compromise the utility of at least 15,000 acres of occupied nest and early brood habitat and contribute to further reductions in chick survival and recruitment across 25% of the PPR habitat base by 2016.

See discussion regarding gather operation outside the HMA in Alternative A; *Special Status Species* section.

Bald eagle**:** Wild horse populations persistently elevated above AML and their influence on upland habitat conditions would have little, if any, measurable influence on bald eagle riverine habitats or use functions within the next five years (through 2016). Although the failure to regulate wild horse populations and allowing numbers to exceed AML by a factor of 2-3 would be undoubtedly detrimental to big game habitat quality in the project area, it is unlikely that short term population level effects would be sufficiently responsive to measurably reduce carrion or alternate prey sources available for bald eagle use in the White River valley.

Northern goshawk, bats**:** BLM-sensitive species and/or Birds of Conservation Concern (BOCC) associated with forest or woodland types would probably remain relatively unresponsive to declining range conditions attributable to unregulated wild horse populations (e.g., northern goshawk, bats) within the next 4-5 years. However, as wild horse numbers increase over time and rangeland degradation becomes more expansive and intensified (i.e., conversion to annual dominated communities), these species would become vulnerable to the indirect effects of declining range health, namely reduced abundance and diversity of invertebrate prey (or prey with invertebrate diets) stemming from progressive degradation of herbaceous ground cover.

Brewer's sparrow and sagebrush vole**:** Brewer's sparrows are addressed integral with the Migratory Birds section. In this section, the implications of increasing numbers of wild horses and season-long grazing on migratory birds is directly applicable to small mammals that depend yearlong on well-developed native forms of herbaceous ground cover as sources of forage and cover, including the sagebrush vole. Similar to breeding bird populations, small mammals may continue to persist in sagebrush and mixed shrub stands with degraded understories, but at densities and with reproductive performance much reduced from potential. As wild horse numbers increase and rangeland degradation - due to annual season-long use - becomes more widespread, annual dominated (i.e., cheatgrass) inclusion are likely to become more prevalent throughout the HMA. Depressed reproductive performance and long term declines in populations of these sagebrush associates may be subtle, but considering the current distribution of wild horses in the WRFO, may extend across up to 50% of the shrubland types south of the White River.

White-tailed prairie dogs**:** Regardless of populations levels attained in the short term, it would be unlikely that wild horses would concentrate use or have an influence on habitat character for prairie dogs in the immediate vicinity of the Highway 64 corridor.

Great Basin spadefoot*:* Increasingly concentrated and expansive summer-long wild horse use in and around upland waters used by these toads for reproduction would increase the likelihood of compromising the toad's annual reproductive efforts by aggravating trampling mortality, providing no recovery period for the redevelopment of ground cover effective in concealing

young toads from other forms of predation, and reducing the persistence of ponded surface waters. This effect is probably localized at the present time, but as wild horse populations increase, wild horse dispersal and each newly established band would increase the number and proportion of available sites subject to impact.

4.6.4 EFFECTS ON LIVESTOCK GRAZING

Under this alternative, permitted livestock within the HMA would be incrementally reduced as the wild horse population increases. There would be no impacts to livestock as a result of gather activities inside of the HMA. However, livestock disturbances associated with gather activities outside of the HMA would be identical to those described in Alternatives A and B. Table 4-2 is a breakdown of how wild horses could distribute themselves throughout the HMA as the population increases. The starting population in 2011 is based on the 2010 census, and the number of wild horses that were counted within each allotment plus a 20% annual population increase (Table 4-2). Table 4-2 assumes that when the wild horse population reaches the level of allocated AUMs within the allotment or pasture, they would redistribute themselves to areas which have not reached the maximum wild horse population and AUMs are no longer available based on the total allocated AUMs within each allotment or pasture.

Table 4-2: Wild Horse Distribution across the HMA Under Alternative C

	Yellow Creek		Greasewood		Square S Pasture C		Cathedral Bluffs	
Year	Number of Wild horses	20% of Population	Number of Wild horses	20% of Population	Number of Wild horses	20% of Population	Number of Wild horses	20% of Population
2011	226	45	76	15	66	13	13	3
2012	271	54	91	18	79*	16	16	3
2013	286*	57	148[2]	30	79	16	35[1]	7
2014	286	57	167*	33	79	16	126[3]	25
2015	286	57	167	33	79	16	257[4]*	51

* Maximum wild horse population within the allotment
[1]Assumes 16 wild horses would move from Pasture C to balance that population at 79
[2] Assumes 39 wild horse would move from Yellow Creek to balance that population at 286
[3]Assumes 11 wild horses from Greasewood, 57 wild horses from Yellow creek, and 16 wild horses from Pasture C would move into Cathedral Bluffs to maintain those populations
[4]Assumes annual increase of 20% would all move into the Cathedral Bluffs allotment to balance the population across the HMA

Table 4-3 below shows a comparison of AUMs used by livestock and wild horses in each allotment or pasture within the HMA as livestock grazing is incrementally reduced under this alternative.

Table 4-3. AUMs Utilized by Livestock and Wild Horses

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019

Allotment	AUMs Authorized	AUMs Used									
Yellow Creek	2,157	1,735	1,735	1,735	1,190	836	413	0	0	0	0
Greasewood	1,569	645	645	645	865	608	300	0	0	0	0
Square S Pasture C	505	453	453	453	279	196	97	0	0	0	0
East Douglas	2,704	1,563	1,563	1,563	1,491	1,049	517	0	0	0	0
Total AUMS used by Livestock	6,935	4,396	4,396	4,396	3,825	2,689	1,326	0	0	0	0
Total AUMS Used by Wild Horses in HMA	2,568	3,286	3,943	4,732	5,678	6,814	8,177	9,812	11,774	14,129	16,955
Total AUMs Used by horses and livestock within HMA	9,503	7,682	8,339	9,128	9,503	9,503	9,503	9,812	11,774	14,129	16,955
Percent of Total AUMs available in HMA Authorized		81%	88%	96%	100%	100%	100%	103%	124%	149%	178%

Based on tables 4-2 and 4-3 above, the following tables show how livestock would be reduced each year by allotment or pasture within the HMA to allow for wild horse population growth.

Table 4-4 below shows livestock reduction in Pasture C of the Square S allotment, as shown in this table, the grazing permittee would need to have taken a 70% reduction in livestock during the 2011 grazing year in order to balance the use of allocated forage for livestock and wild horses within this pasture. Starting in 2012, Pasture C of Square S would no longer be used by livestock. Although the rest of the allotment would remain open to livestock grazing, without the use of this pasture to trail livestock to summer range outside of the HMA, it would likely not be economical for the livestock permittee to move cattle to the summer range by other means such as trucking, and the operator would no longer use any of this allotment. The Square S allotment is used by two grazing permittees, the other operator which uses a pasture to the south to move livestock to summer ranges would not likely be affected by removing livestock grazing from Pasture C. Although there are 7 AUMs available to livestock, it would not be operationally feasible to utilize this forage.

Table 4-4. Incremental reduction of livestock within the Square S Pasture C

Year	Available	Pasture	Number of	Grazing	AUMs

	AUMs		Livestock	Period		
				On	Off	
2011	163	C	155	5/20	6/20	163
2012	7	C	0	5/20	6/20	0
2013	7	C	0	5/20	6/20	0
2014	7	C	0	5/20	6/20	0
2015	7	C	0	5/20	6/20	0

Table 4-5 shows livestock reduction in the Yellow Creek allotment, this allotment is located entirely within the HMA, and is used by one livestock operator. As shown in this table, the grazing permittee would have to reduce the overall use in this allotment by 66% beginning 4/15 of 2011. Under this scenario, 75 cattle could be run on the allotment using the current permitted dates, however 240 cattle are currently permitted within the Barcus-Pinto pasture from 5/1-5/15, the operator would not be able to take this permitted use beginning in 2011. In 2012 the operator would have to reduce livestock use by 92%, also spring use from 4/15 to 5/15, and winter use during the entire month of January would not be available. Beginning 2013, no AUMs would be available for use by livestock in the Yellow Creek allotment on Public lands.

Table 4-5: Incremental reduction of livestock within the Yellow Creek Allotment

Year	Available AUMs	Pasture	Number of Livestock	Grazing Period		AUMs
				On	Off	
2011	720	Rocky Ridge	75	4/15	5/15	76
		Barcus-Pinto	75	5/16	6/30	113
		Boxelder	75	7/1	10/15	264
		Barcus-Pinto	75	10/16	12/30	190
		Rocky Ridge	75	1/1	1/31	76
					Total	719
2012	180	Barcus-Pinto	24	5/16	6/30	36
		Boxelder	24	7/1	10/15	84
		Barcus-Pinto	24	10/16	12/30	60
					Total	180
2013	0	All	0	4/15	1/31	0
2014	0	All	0	4/15	1/31	0
2015	0	All	0	4/15	1/31	0

Table 4-6 below represents the incremental reduction of livestock within the Greasewood grazing allotment. This allotment is also entirely within the HMA, and is used by one grazing permittee. As shown in this table, the livestock operator would have to reduce livestock numbers

by 12% for the spring use period, but would be able to run full numbers during the winter use period for the 2011 grazing year. During the 2012 grazing year, the operator would need to reduce spring use by 40%, and winter use by 9%. Livestock use during the 2013 grazing year would need to be reduced by 85% during the spring use period, and 77% during the winter use period. By the 2014 grazing year no AUMs would be available to livestock within the Greasewood grazing allotment.

Table 4-6. Incremental reduction of livestock within the Greasewood grazing allotment

Year	Available AUMs	Pasture	Number of Livestock	Grazing Period		AUMs
				On	Off	
2011	1092	All	361	4/15	5/15	368
		All	272	11/1	1/20	724
					Total	1092
2012	912	All	247	4/15	5/15	252
		All	248	11/1	1/20	660
					Total	912
2013	228	All	62	4/15	5/15	63
		All	62	11/1	1/20	165
					Total	228
2014	0	All	0	4/15	5/15	0
		All	0	11/1	1/20	0
2015	0	All	0	4/15	5/15	0
		All	0	11/1	1/20	0

The table below shows how livestock would be reduced under this alternative in the Hogan and Tommy's draw pastures of the Cathedral Bluffs allotment. The Hogan and Tommy's Draw pastures are winter and early spring pastures within this allotment, there are 6 other pastures used during the summer and fall within the allotment, one pasture which is entirely private land. The Cathedral Bluffs allotment is used by one grazing permittee. As shown in this table, the operator would not need to take a reduction in use during the 2011 or 2012 grazing years, and there would be AUMs available to wild horses. Under this alternative, livestock reduction in this allotment would need to begin during the 2013 grazing year, the operator would have to reduce use by 1%. During the 2014 grazing season, livestock use would have to be reduced by 40%. During the 2015 grazing year, livestock use would need to be reduced by 99%, grazing 27 cattle for one month in the Hogan Draw pasture only. This would be the last livestock grazing within the HMA.

Table 4-7. Incremental reduction of livestock within the Cathedral Bluffs Allotment

Year	Available AUMs	Pasture	Number of Livestock	Grazing Period		AUMs
				On	Off	
2011	2956	All	No livestock reduction 252 AUMS available to wild horses			
2012	2920	All	No livestock reduction 216 AUMS available to wild horses			
2013	2692	Hogan Draw	525	3/1	3/31	535
		Tommy's Draw	525	4/1	4/30	518
		Tommy's Draw	50	5/1	5/31	51
		Tommy's Draw	100	11/15	11/30	53
		Hogan Draw	262	12/1	12/30	258
		Tommy's Draw	263	12/1	12/30	259
		Hogan Draw	525	1/1	2/28	1018
					Total	2692
2014	1612	Hogan Draw	305	3/1	3/31	311
		Tommy's Draw	305	4/1	4/30	301
		Tommy's Draw	50	5/1	5/31	51
		Tommy's Draw	100	11/15	11/30	53
		Hogan Draw	153	12/1	12/30	151
		Tommy's Draw	153	12/1	12/30	151
		Hogan Draw	306	1/1	2/28	594
					Total	1612
2015	28	Hogan Draw	27	3/1	3/31	28

At the current rate and when factored over the next five year period (2011 – 2015) the wild horse utilization would displace cattle within the following allotments in the following order: Pasture C, Square S Allotment in 2012; Yellow Creek Allotment in 2013; Greasewood Allotment in 2014; and the Cathedral Bluffs Allotment in 2015. Livestock use would be incrementally reduced in each allotment as the wild horse population increases in the HMA, however all livestock use would be eliminated by the 2016 grazing year, and BLM could no longer rely on reducing livestock within the HMA in order to balance available forage to the wild horse population. Four grazing permittees within the WRFO which currently graze livestock within the HMA would be impacted by the loss of the opportunity to graze within the HMA. As shown in the tables above, livestock reductions would need to have begun April 15th of 2011 in order to balance use by livestock and wild horses within the allocated levels within the HMA, this reduction is not currently taking place. Implementing reductions in livestock grazing would begin at the start of the 2012 grazing season, reductions in livestock permitted use on allotments within the HMA would be conducted in accordance with 43 CFR 4110.3-3. As livestock grazing is reduced and eliminated from the HMA, grazing permittees would no longer cooperate in the

maintenance and construction of rangeland improvement projects such as ponds, wells, and spring developments which provide valuable water sources for wild horses. The BLM would also be required to compensate permittees for the fair market value of their interest in existing range improvement projects (43 CFR 4120.3-7(c)). Grazing permittees would also no longer conduct and participate in weed control treatments within the HMA. The livestock reduction levels shown above are based on the assumption that as the wild horse population increases to a level which would use more than the total AUMs allocated to livestock and wild horses within an allotment or pasture, the wild horses would redistribute themselves within the HMA. It would be necessary for the BLM to conduct annual inventories of wild horses to accurately determine the level of livestock which would need to be removed each year, based on the population.

4.6.5 EFFECTS ON WILD HORSES

Impacts to wild horses under Alternative C would be both direct and indirect, occurring on both individuals and populations as a whole. Wild horses outside the HMA would experience impacts from the gather similar to those as described under Alternative A. The BLM assumes that the wild horses will redistribute themselves across the landscape and that the wild horses will make use of the seasonal locations in the appropriate season (i.e. summer range in the summer only). Wild horses inside the HMA would not experience the stress associated with gathering and removal operations until approximately the year 2016. Beginning in 2016, regular annual gather operations to remove approximately 158 wild horses would be required in order to stay within the allocated/available forage. Table 4-9 provides the projected population increase over the next 11 years based upon the 2010 inventory and 20% growth rates for both inside and outside the HMA. Management of the HMA with an increased population of wild horses would provide for greater genetic variability, and improved herd health.

This alternative assumes that gather schedules would either be annual until AML is established, or once AML is established the gather schedule would be returned to the 3-4 year time line. The AML range may be adjusted to allow for a wider AML range which would potentially allow for reduced gather frequency. This frequency could further be extended if aspects of Alternative A were incorporated into the management of wild horses in the future.

The BLM will continue vegetative monitoring to establish the AML for the HMA under season long grazing. Of particular importance is that wild horse AUMs are calculated on a year-long grazing schedule versus a partial year as was with the case of livestock grazing. Until the time when the wild horses have replaced the livestock, the BLM would expect to see conflicts between livestock and wild horses due to the larger number of wild horses in the allotments (HMA).

Once the HMA is considered at carrying capacity, the BLM would expect to see the less dominant wild horses (or bands) seeking refuge for available forage and water resources, along with social space, beyond the HMA boundary from those wild horses that are more dominant and aggressive. By 2015, under normal climatic conditions, the BLM may begin to see an overall decline in wild horse body condition and health of the entire population due to any disbursement issues within the HMA and if the wild horse population has exceeded the available resources.

In addition, a number of private and state perennial water sources within the HMA would be fenced off, which would reduce the perennial waters available for wild horse use. The BLM would expect that overall range throughout the HMA would experience use outside what would be considered normal use periods, such as overuse of winter range during summer months with no opportunity for vegetation rest and recovery (previously discussed in vegetation section above).

Until the BLM is able to determine the appropriate carrying capacity and AML, monitoring may show excessive utilization, trampling, and trailing by wild horses, which may further degrade the vegetation and rangeland conditions, prevent improvement of range condition, and would potentially not allow for sufficient availability of forage and water for either the wild horses or other ungulates especially during years of drought and/or severe winter conditions. Wildland fires, considering the Piceance Basin averages 85 natural fire ignitions per year, as well as other uses within the HMA are also a concern. The ultimate result could be a death loss to the wild horse herd. Continued decline of rangeland health followed up by irreparable damage to vegetative, soil and riparian/water resources would have impacts to the HMA. If a catastrophic event were to occur, the BLM would take action to avoid wild horse death loss within the HMA. Under this alternative the BLM's flexibility to mitigate impacts to the range is limited in comparison to Alternatives A, B, and D, where the BLM could remove livestock to address changes in rangeland conditions.

As the wild horse numbers increase, the BLM would expect to find wild horses congregating in high densities within various portions of the HMA. Further, based on the overall increased population size, the BLM would expect the number of bachelor and harem bands to increase in number and size; competition for mares would be expected to increase; and the number of wild horses seeking refuge for forage and/or social space beyond the HMA boundary is expected to increase. These effects could require that the BLM possibly conduct a gather operation annually in order to gather and remove those wild horses that have relocated outside of the HMA boundary.

At this time, the BLM would gather and remove only those wild horses that are located outside of the HMA. Therefore those wild horses will be disturbed by activities associated with any gather which are unavoidable. Wild horses must travel over varying terrain to the trap locations. There is always the possibility that wild horses will be injured or killed during any phase of the gather and removal operation. Methods and procedures have been identified and refined throughout the western states to minimize stress and impacts to wild horses during implementation of wild horse gathers.

Wild horses are not a self-regulating species and would continue to reproduce until their habitat could no longer support them. Usually the habitat is severely damaged before the wild horse population would be abruptly impacted and experience a substantial death loss. Significant loss of the wild horses in the HMA due to starvation or lack of water would have obvious consequences to the long-term viability of the herd. This alternative poses a great risk to the health and viability of the wild horse population, wildlife populations, water and vegetative resources. The BLM would expect the end result to be degradation of vegetation communities in composition, productivity, and vigor which will require the wild horses to continue their search

for available forage, water resources and band demographics beyond the HMA.

With each gather the opportunity for instances of injury and/or death to wild horses are multiplied simply by the necessity for an annual gather operation.

Table 4-8. Estimated Growth of wild horse populations within the HMA and associated AUMs.

Year (Fall)	Adult Wild Horses	20% Population Increase	Population to Gathered and Removed	Post Gather Population	AUMS
2010	318	64			3,816
2011	382	76			4,579
2012	458	92			5,495
2013	550	110			6,594
2014	659	132			7,913
2015	791	158			9,492
2016*	949	158	158	791	9,492
2017	949	158	158	791	9,492
2018	949	158	158	791	9,492
2019	949	158	158	791	9,492
2020	949	158	158	791	9,492
2021	949	158	158	791	9,492
		Total	1,480		

*At the allocated carrying capacity requiring additional gather to maintain TNEB.

4.6.6 EFFECTS ON CULTURAL AND PALEONTOLOGICAL RESOURCES

Cultural

Under Alternative C, the numbers of livestock would decrease each year as the number of wild horses increase, with livestock being eliminated by 2016. This would alternate the current situation of livestock grazing and wild horse use cumulatively affecting the cultural resources in the HMA, to solely being wild horse impacts, however the effects would be similar. Wild horses, similar to livestock, can concentrate in and trail through sites, which causes trampling to artifacts and features, disrupting site stratigraphy. They can similarly reduce vegetation cover, causing wind and water erosion. Overall the effects to cultural resources inside the HMA, are similar to those discussed in Alternative A as being caused by wild horse activity.

Under Alternative C gathering wild horses outside the HMA would have the same impacts to cultural resources outside of the HMA as described in Alternative A as gather impacts. Under this alternative, because there would be no gather within the HMA there would be no short term impacts to cultural resources from gather operations within the HMA.

Paleontology

Under Alternative C wild horse numbers would continue to increase. With the increase in wild horse numbers there would be a corresponding increase in wild horse concentrating and/or trailing in some areas or rubbing on exposed vertical exposures in other areas. Should those concentration or trailing areas happen to coincide with exposures of fossiliferous stone or rock outcrops there is an increased potential for damage to fossil resources from trampling of or rubbing on the exposed rock. The more wild horses there are, the greater the potential for trailing and concentrating on exposed horizontal surfaces or rubbing on vertical surfaces and the greater the potential impact to fossil resources.

Maintaining 9036 animal unit months of forage allocation for the area inside the HMA and reducing livestock numbers as horse numbers increase would result in the same impacts as would occur if grazing of livestock and herd size were managed at the previously forage allocation levels in the 1997 RMP. Impacts in areas where either wild horses or livestock would concentrate or trail would be the same as those under Alternative A. When it becomes necessary to gather wild horses inside the HMA to maintain the 9036 animal unit month forage allocation impacts actions associated with gathering excess wild horses would be the same as those described under Alternative A.

Under Alternative C, gathering wild horses outside the HMA would have the same impacts to fossil resources as described in Alternative A.

Under this alternative, because there would be no gather within the HMA there would be no short term impacts to fossil resources from gather operations within the HMA. However, there could be short term impacts to fossil resources as a result of gather operations outside the HMA.

4.6.7 EFFECTS ON AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Potential impacts to paleontological resources, such as those within the Coal Draw ACEC, are described in the Paleontology section above. Potential impacts to cultural resources in the Duck Creek ACEC are analyzed in the Cultural Resources section above. Impacts to the rare plant resources in the Duck Creek, South Cathedral Bluffs, Upper and Lower Greasewood ACECs could also occur, such as trampling as wild horses are herded through special status plant species habitat to a trap. The BLM will not locate any traps within ACECs. The reader is referred to the Special Status Plant discussion above.

4.6.8 EFFECTS ON RECREATION

Under Alternative C, impacts associated with gather operations for wild horses outside the HMA would be similar to those in Alternatives A and B. However, no gather operations would occur within the HMA and wild horse populations are expected to increase yearly while the number of livestock allowed to graze will be incrementally reduced. Until the BLM is able to establish the proper carrying capacity and AML within the HMA for wild horse grazing only to maintain

TNEB, it is expected that annual gathers may be necessary to maintain the population. If wild horse populations increase to a point where they begin to displace terrestrial big game wildlife as a result of diminished forage availability, a negative impact on the hunting experience could occur that is proportionate to the time frame necessary for the BLM to set its AML and achieve TNEB. Big game hunting on public lands also provides a significant contribution to the local economy. Any impact to the hunting experience from increased wild horse herd levels may also indirectly have a significant impact on the local economy.

One potential positive impact from this alternative is that an increase in wild horses would likely increase the ability of wildlife viewing enthusiasts and casual observers to locate and enjoy wild horses.

4.6.9 EFFECTS ON NOISE

While the first couple of years would experience no impacts from gather efforts impacts would occur. Until the BLM is able to establish the proper carrying capacity and AML within the HMA for wild horse grazing only to maintain TNEB, it is expected that annual gathers may be necessary to maintain the population. If annual gathers are not completed and AML allows for gathers on a certain cycle the impacts would be dependent upon the cycle of those gathers. It is anticipated that gather cycles would be every 3-4 years. However, based on the population estimates of wild horses in Table 4-9 it is likely that gathers would be longer duration increasing the overall impacts from localized gather operations.

4.6.10 EFFECTS ON WASTES, HAZARDOUS AND SOLID

Similar to Alternative A and B above.

4.6.11 EFFECTS ON SOCIOECONOMICS

Socio economic impacts resulting from the removal of livestock grazing under this alternative could result in measurable economic loss within Rio Blanco County. Instruction Memorandum 2011-086, identifies the average private land grazing lease rate for Colorado in 2010 was $15.00. Table 4-9 shows the additional cost to livestock operators currently within the HMA if they were to graze livestock on private land as reductions occur within the HMA. The table is based on livestock operators being able to lease enough private land to adequately support their current permitted use.

Table 4-9. Livestock Operator Availability of Private AUMs.

Allotment	Year	AUMs Available	AUMs Permitted	Private AUMs Necessary	Private Grazing Cost ($15.00/AUM)	Public Land Grazing Cost	Difference

						(1.35/AUM)	
Square S pasture C	2012	7	505	498	$7,470.00	$681.75	$6,788.25
	2013	7	505	498	$7,470.00	$681.75	$6,788.25
	2014	7	505	498	$7,470.00	$681.75	$6,788.25
	2015	7	505	498	$7,470.00	$681.75	$6,788.25
						4 Year Total	$27,153.00
Yellow Creek	2012	180	2157	1977	$29,655.00	$2,911.95	$26,743.05
	2013	0	2157	2157	$32,355.00	$2,911.95	$29,443.05
	2014	0	2157	2157	$32,355.00	$2,911.95	$29,443.05
	2015	0	2157	2157	$32,355.00	$2,911.95	$29,443.05
						4 Year Total	$115,072.20
Greasewood	2012	912	1569	657	$9,855.00	$2,118.15	$7,736.85
	2013	228	1569	1341	$20,115.00	$2,118.15	$17,996.85
	2014	0	1569	1569	$23,535.00	$2,118.15	$21,416.85
	2015	0	1569	1569	$23,535.00	$2,118.15	$21,416.85
						4 Year Total	$68,567.40
Cathedral Bluffs	2012	2704	2704	0	$0.00	$3,650.40	$0.00
	2013	2692	2704	12	$180.00	$3,650.40	$180.00
	2014	1612	2704	1092	$16,380.00	$3,650.40	$12,729.60
	2015	28	2704	2676	$40,140.00	$3,650.40	$36,489.60
						4 Year Total	$49,399.20

Impacts to socioeconomics of the recreational community may be more observable when multiple gathers occur over long time periods or if gathers occur in back to back years. Hunters and other recreational users may choose to avoid these areas due to the lower enjoyment of these experiences and high likelihood that gather timing would correlate with these activities. However, under this alternative recreational viewing of wild horses may increase due to the ease of locating wild horses and more tourism may be generated to help off-set some of the loss of recreational hunting. It is likely that the overall negative economic impacts would be greater than these benefits.

4.6.12 CUMULATIVE IMPACTS (ALTERNATIVE C)

SOIL, WATER AND AIR: Soil Resources, Water Resources, Air Quality

Cumulative impacts for Alternative C will be similar to those described in Alternative A with exception of having more gathers once wild horse populations within the HMA exceeded the carrying capacity.

VEGETATION RESOURCES

The CAA for vegetation resources includes the Piceance and Douglas/Evacuation Creek watersheds within Colorado. Cumulative impacts under Alternative C include increased season

long use of upland and riparian vegetation by wild horses, especially within the grazing allotments, with current prescribed grazing, which defers livestock grazing during the growing season along with seasonal use by other wild grazing ungulates as well as continued disturbance and clearing of vegetation associated with ongoing energy exploration and development. The absence or delay of a gather in 2016, due to unforeseen circumstances, would result in disturbance and overutilization contributing to degraded plant communities, which shift to undesirable states providing limited forage and habitat resources and potential for wide spread erosion, as well as, increased risk of establishment and proliferation of noxious weeds within degraded communities. The BLM would lose cooperation in noxious weed management from livestock operators within the area.

WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Terrestrial Wildlife: Cumulative impacts associated with Alternative C include the direct and indirect consequences of wild horse-related grazing effects on the availability and composition of big game forage and non-game forage and cover would represent strong additions to collective ungulate grazing-related effects on native vegetation communities and contribute widely to vegetation clearing and occupation associated with past and ongoing mineral development and the proliferation of invasive and noxious weeds in the Piceance and Douglas/Evacuation Creek Basins within Colorado

Migratory Birds: Progressive deterioration of native ground cover communities, particularly in sage-steppe habitats, would contribute to the cumulative range-wide deterioration and modification/loss of sagebrush habitats and birds associated with that vegetation type (e.g., Brewer's sparrow, dusky grouse, Virginia's warbler). More locally, these effects would add substantially to the direct occupation and longer term modification of shrubland nest cover that has and continues to occur from natural gas development and those areas entrenched with invasive annual weeds, introduced grasses, and noxious weeds in the Piceance and Douglas Creek basins, as well as that nesting habitat historically influenced by livestock, wild horse, and big game wildlife grazing use (e.g., diminishment of nest cover and forage substrate). Although unlikely to compromise population viability at the scale of Piceance or Douglas Basins in the short term, this alternative would likely prompt distribution discontinuities and severe localized reductions in the abundance of more specialized species, such as dusky grouse and green-tailed towhees.

Threatened, Endangered and Sensitive Animal Species: Sediments originating from those areas subjected to incompatible wild horse and livestock grazing regimens would contribute cumulatively to those sediments being produced and transported through the White River system and those tributary systems within the WRFO that support special status fish and amphibians from the development of oil and gas resources in the Piceance, Douglas, and Coal Oil Basins and from other public lands administered by the Field Office that fail to meet Public Land Health Standards 1, 2, and 3.

With regards to sagebrush obligate species, namely greater sage-grouse but also including Brewer's sparrow, sagebrush vole, Great Basin spadefoot: Progressive deterioration of native ground cover communities, particularly in shrub-steppe habitats, would contribute to the

cumulative range-wide deterioration and modification/loss of sagebrush habitats and animals obligate to the type from oil and gas developments and the proliferation of invasive annual grasses. Rangeland deterioration expected under this alternative would contribute to annual conversion of BLM rangelands to invasive annuals throughout the western states (840,000 acres per year) (Department of Interior 2010). Habitat deterioration from grazing induced shifts in herbaceous understory composition; especially cheatgrass and its influence on altered fire regimes have eliminated vast expanses of sagebrush across the western US. For example, aggravated by cheatgrass domination, nearly 20% of sagebrush types within western sage-grouse range have burned since 1980 (Department of Interior 2010).

Wildlife, Aquatic: The CAA for aquatic wildlife encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. Sediments originating from those areas subjected to incompatible wild horse and wild horse-influenced livestock grazing use would contribute cumulatively to those sediments being produced and transported through the White River system and those tributary systems within the WRFO that support aquatic communities from the development of oil and gas resources in the Piceance, Douglas, and Coal Oil Basins and from other public lands administered by the Field Office that fail to meet Public Land Health Standards 1, 2, and 3.

LIVESTOCK GRAZING

The CAA for livestock grazing includes all grazing allotments administered by the WRFO within the analysis area. Cumulative impacts to livestock grazing under Alternative C include the removal of livestock grazing from 4 of the 16 grazing allotments managed by the WRFO within the analysis area, including removal of grazing privileges of 4 of the 12 grazing permittees currently authorized to graze livestock within the analysis area. Approximately 166,888 acres of the 393,772 acres public land within the analysis area would be closed to livestock grazing. The BLM would gain sole responsibility for maintenance and repair of all range improvements within the HMA including water developments, fences, and weed control, these improvements provide benefits to livestock, wild horses and wildlife throughout the analysis area.

WILD HORSES

The cumulative analysis area (CAA) for wild horses includes the HMA and areas outside of the HMA where wild horses are known to occur.

Cumulative Impacts common to Alternative C include impacts resulting from previous, current, and future gathers to maintain the wild horse populations within the identified AML and continue to maintain thriving natural ecological balance. Other cumulative impacts to wild horses within the HMA would include prolonged periods of drought, competition for limited water and forage, wildland fire, and continued energy exploration/development. By maintaining wild horse populations within the range of AML, the impacts to wild horses resulting from these cumulative impacts would be reduced due to the appropriate number of wild horses being within the HMA. The AUMs were set to maintain thriving natural ecological balance within the HMA.

CULTURAL RESOURCES AND PALEONTOLOGY

Cultural Resources- The CAA for cultural resources is the HMA and areas adjacent where wild horses are known to occur. For Alternative C, the cumulative impacts would actually be similar to Alternative A. Alternative C alternates the current situation of livestock grazing and wild horse use cumulatively affecting the cultural resources in the HMA, to solely being horse impacts, however the overall effects to cultural resources would be similar. Cumulative impacts to cultural resources from wild horses outside the HMA would be significantly reduced or eliminated if all the wild horses outside the HMA were gathered.

Paleontological Resources-Impacts to paleontological resources Alternative C would continue to increase in relation to the increase in horse numbers. Impacts from gathers would continue where trap sites and drive lines are located if exposed outcrops cannot be avoided. There would be some reduction of impacts from livestock grazing but these would likely be offset by the increase in impacts from increasing horse numbers. The continued loss of fossil resources might be accelerated to some degree but would still be long term and permanent.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The CAA under this alternative would be limited to the HMA boundary. The cumulative affects to the resources for which the ACEC was designated are discussed in those sections above.

RECREATION

The CAA under this alternative would be limited to the HMA boundary. Cumulative impacts under this alternative would be similar to those of Alternatives A and B. However, under this alternative cumulative impacts are delayed until gather operations resume. If annual gathers are required while the BLM establishes the new AML, the impacts would increase proportionally by year.

NOISE

Cumulative Impacts under this alternative would be similar to those of Alternative A. However, under this alternative cumulative impacts are delayed until gather operations resume. If annual gathers are required while the BLM establishes the new AML, the impacts would increase proportionally by year.

WASTES, HAZARDOUS AND SOLID

Cumulative impacts for Alternative C will be identical to those described in the Proposed Action with exception of having no gathers in the HMA until wild horses reach AUM thresholds.

SOCIOECONOMICS

Under this alternative both Rio Blanco County and the State of Colorado may see a decrease in overall revenue from the region from both the agricultural industry as well as from the recreational hunting revenue.

4.7 ALTERNATIVE D - No Action - Defer Gather and Removal of Excess Wild Horses Short Term and Long Term.

4.7.1 EFFECTS ON SOIL, WATER & AIR

Soil Resources

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B.

Wild horses would be expected to expand their range approximately 92%, from 166,888 acres of public land inside the HMA to approximately 320,208 acres of public land within and outside of the HMA by 2019. As horse populations increase they would expand their range outside the HMA and these areas outside the HMA would experience impacts from grazing, trailing and concentrated use, where under alternatives A, B and C they would not. The analysis area has 280 acres of fragile soils and 2,463 acres of saline soils, assuming these are distributed in similar proportion in the HMA.

The range conditions within the HMA and outside the HMA will likely deteriorate once carrying capacity is exceeded by continued wild horse and livestock grazing which could be characterized at having significant removal of vegetation. It is likely that soil productivity and soil stability will deteriorate to a point where erosion and topsoil loss could be dramatic. This impact is more likely in fragile and saline soils. Since impacts can be expected in areas with generally poor soils, impacts would likely exceed Public Land Health Standard for Upland Soils under this alternative.

Water Resources

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Soil loss would increase sedimentation and salt-loading in surface waters downstream from areas that experience more grazing, trailing and concentrated use. Since these impacts could occur in areas of poor soils, these areas could contribute to an exceedance of the Public Land Health Standard for Water Quality.

If water sources on private lands were fenced out as described in the livestock section, then additional impacts to water sources on public lands can be expected. Increasing wild horse numbers is also likely to result in more impacts to drainages and from trailing that can change surface hydrology.

Air Quality

Long-term direct impacts to Air Quality from grazing and trailing would be higher than the Proposed Action since wild horse herd numbers would continue to rise and air quality benefits

from reducing wild horse herd levels would not be realized. Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B.

4.7.2 EFECTS ON VEGETATION RESOURCES

General Vegetation

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Wild horses would be expected to expand their range approximately 92%, from 166,888 acres of public land inside the HMA to approximately 320,208 acres of public land within and outside of the HMA by 2019. The expanded range includes an additional 12,226 acres of rolling loam ecological site located on public land (Map 4-1). Increased utilization on those sites showing high moderate, heavy and severe use would be expected to contribute to declining vegetative resource values. Those resource values would be anticipated to continue to decline to a point where vegetative resources would no longer support wild horse populations or wild horses would need to range further to acquire forage (Map 1-1).

As the wild horse population increases, much of the HMA and expanded distribution area would be at risk (Map 4-1) to heavy continuous season long grazing. The rolling loam ecological sites would begin to transition away from the desired plant community to the less desirable Wyoming big sage brush/rhizomatous wheatgrass community, and eventually the cheatgrass dominated community. The transition to cheatgrass dominated community would be accelerated by the presence of wildfire, as cheatgrass begins to invade a site, the site becomes more susceptible to frequent fire cycles which suppress native vegetation, while giving cheatgrass a competitive advantage to create a monoculture. Forage production within these sites will be reduced as the plant community transitions away from the desired community average forage production of the DPC is approximately 1100 pounds/acre annually, this can be reduced 20% as the community shifts to the less desirable state, and approximately 77% as the community shifts to the least desirable states. Because the exact acres currently occupied by each plant community it is not known, the exact amount of production that would be lost as a result of the transition to the least desirable community cannot be calculated. However, assuming half of the acres of the rolling loam ecological sites are occupied by the DPC, and half of the acres are occupied by the less desirable Wyoming big sagebrush/rhizomatous wheatgrass community, or 11,516 acres each, these sites would be producing approximately 23,032,000 pounds of forage annually, or approximately 2399 AUMs of forage. As these areas transition to the least desirable states, total annual production would be reduced to approximately 5,758,000 pounds of forage or approximately 600 AUMs. As noted in the affected environment these transitions are not readily reversible. The AUM figures are based on total forage production, in which no residual forage would be left for maintenance and recovery of vegetation following grazing. Using the general take half leave half rule of thumb, (which is higher than desirable in the absence of a grazing management strategy that controls the timing of utilization to coincide with plant growth requirements), the carrying capacity for wild horses only with no other grazing animals utilizing these areas would be reduced from approximately 100 wild horses annually to approximately 25 wild horses annually under this scenario. The example above is for the rolling loam ecological site, only; the remaining ecological sites would also be at risk of transition to other less desirable

plant communities, and eventually dominance by cheatgrass. As the wild horses range out further in search of forage, utilization in terms of both intensity and duration will increase. The end result would be degradation of these vegetation communities in composition, productivity, and vigor which will require the wild horses to continue their search for forage. Due to the lower population of wild horses within the Magnolia Bench area, there is less risk for these areas to transition to less desirable plant communities as a result of over use.

Following transition of rangeland vegetation communities to cheatgrass dominated sites, it is costly and difficult to return these sites to near the DPC state. Human manipulation would involve application of herbicide to suppress cheatgrass, followed by seeding of desirable native species, and deferment of the area from all grazing for at least two growing seasons. Retreatment and continual seeding over a number of years would likely be necessary to realize measurable results in moving toward the DPC, following successful establishment of desirable vegetation, and suppression of cheatgrass, the natural progression of this site towards the DPC can take decades and would require intensely managed prescribed grazing and the absence of wildfire. Transition to this state also increases erosion as soil is not protected by vegetation cover. Under this alternative, the BLM would exceed carrying capacity for both the HMA as well as those surrounding allotments outside of the HMA. It is anticipated that by 2019 increased density of wild horses both inside and outside of the HMA would contribute to the BLM not meeting rangeland health standards within the entire 320,208 acres and the DPC will have shifted to a less desirable rabbitbrush/rhizomatous wheat grass plant community and/or cheat grass dominated community.

Noxious Weeds

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. The primary concern is the expansion of cheatgrass which was addressed in the previous section during the analysis of plant succession. Failure to reduce wild horses in these areas would continue to degrade plant communities as the wild horse population increases. As wild horses expand their range to areas outside of the HMA, the total amount of acreage within the WRFO vulnerable to invasion by noxious weeds would increase. Readily available native rangeland forage would continue to decrease as the wild horses are expected to expand their range in search of forage. Degraded plant communities would be expected to increase. These weakened plant communities would be susceptible to weed invasion.

Wetland-Riparian

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Heavy and persistent use would continue, resulting in further suppressed wetland and riparian development, further degradation to downstream potential for riparian expression to the point where valuable wetlands and riparian zones could be irreversibly lost.

Special Status Species

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Although the current foraging of shale barren plant habitats by wild horses is generally low throughout the herd area, continued increase of wild horse numbers could produce trampling or foraging of special status plant species and unique

vegetation sites, especially during drought when overall forage is limited. Under this alternative, adverse impacts to special status plant species, unique and remnant vegetation would be expected to increase as the grazing pressure for available forage increases, especially under drought conditions.

4.7.3 EFFECTS ON WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Wildlife, Terrestrial

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Exponential increases in wild horse populations would be sustained in the short term both inside and outside the HMA. Wild horse contributions to the overall livestock/wild horse grazing load in the HMA would increase from about 40% presently to about 58% by 2015 and 73% by 2019 (average annual increase of 10%). Total forage use attributable to current wild horse numbers inside and adjacent to the HMA (5515 AUMs) would nearly double by 2015 and quadruple by 2019. Similar effects would take place on those ranges occupied by wild horses outside the HMA (264,000 acres). Broad and expansive overlap of wild horses on important seasonal big game ranges would also continue, including 25-40% of big game summer range and up to 80% of deer severe winter ranges in the Piceance Basin, and 40-50 % of deer critical winter range in each of GMU 21 and 22 (see table 3-2 in Affected Environment). Direct and indirect competitive interactions between wild horse and big game would become more extensive and intense over time, particularly on summer ranges in close proximity to water, south-facing slopes on severe and critical winter ranges, and lower-elevation sagebrush/greasewood parks and bottoms used in spring as big game follow receding snowpacks to summer range.

Wildlife-related consequences of season-long grazing practices attributable to higher density wild horse populations are addressed elsewhere in this section (Environmental Consequences of Alternative A, Big game), the *Threatened, Endangered, and Sensitive Animal Species* section (Environmental Consequences of Alternative D, Aquatic species), and *Migratory Bird* section (Environmental Consequences of Alternative D). The implications of protracted season-long herbivory on forage conditions for big game are especially pertinent on big game summer ranges and those lower elevation sagebrush park and bottomlands on big game winter ranges that are used to procure emerging growth in spring for winter recovery and gaining a nutritional status adequate for successful gestation (see discussion in Affected Environment, Big game). As wild horse populations grow and forage conditions on preferred use and concentration areas decline, the cumulative acreage that would become subjected to concentrated season-long grazing use from wild horses or exaggerated seasonal use by coincident livestock and big game, are likely to become evident across up to 75,000 acres of big sagebrush and mixed shrub habitats outside the HMA and about 50,000 acres inside the HMA, accounting for about 50% of the these shrubland types in the WRFO south of the White River. To accommodate wild horse increases alone, those areas subjected to heavy or further season-long grazing use would need to expand at a calculated average rate of about 30% per year to meet the annual increase in forage demand. An example of this trend is provided by the 29 wild horses establishing use in the Cathedral Creek pasture of the Cathedral Bluffs allotment. This dispersal from the East Douglas portion of the HMA presently exposes an additional 12,500 acres of big game summer range to the influence of

season-long wild horse use.

Direct and indirect forage competition effects are expected to become locally severe during the winter use period as well. Based on wild horse distribution in March 2010, wild horse use of deer severe winter ranges in the North Piceance removal area was roughly comparable to wild horse abundance and distribution on adjacent winter ranges in the lower Yellow Creek Basin where 80% reductions in wild horses are considered necessary (i.e., Greasewood, Barcus/Pinto) to maintain rangeland integrity. Wild horse populations in these situations would be expected to double in abundance and extent by 2015 and quadruple by 2019. During the subsequent growing season, these harsh sites are not capable of quickly recovering from episodes of heavy collective ungulate use (e.g., use that exceeds current annual growth) and, with continued use by deer in following years, acreage depleted of woody forage would accumulate rapidly and persist in the long term. Deer, by nature, do not have a strong tendency to rapidly pioneer new ranges and sources of forage and diminished availability of woody forage would be expected, in the short term, to measurably influence the weight and nutritional regimes of affected groups of deer. By 2015, AUMs attributable to overall wild horse and livestock use in the Yellow Creek allotment (associated with Barcus-Pinto winter ranges) are expected to increase by 60% with wild horses accounting for 75% of this use (60% currently). As a point of comparison, wild horse-related grazing use on these big game winter ranges by 2015 would be 5-10 times that associated with the authorized AML range for this complex of wild horses. Similarly, by 2019, wild horse-related grazing use on these winter ranges would be 11-12 times that associated with the lower end of AML for this pasture.

Dusky grouse: In the short term (through 2015), wild horses would continue to occupy and incrementally intensify their influence on about 20 to 30% of the overall dusky grouse range associated with the Douglas and Piceance Creek Basins, respectively. Overall grazing load by livestock and wild horses during the spring through fall months would increase on favored ridgeline sagebrush and mixed shrub reproductive habitats within the HMA by an average 12% annually, reaching levels about 60% higher than current use by 2015, or about double the overall levels achieved at the higher end of AML. By 2019 overall grazing load attributable to wild horses and livestock will have increased 2-3 times from current levels. Wild horses would persist in occupying about 67,000 acres of dusky grouse overall range outside the HMA (~10-20% of dusky grouse range in GMUs 21 and 22, respectively). Annual increases in herbivory on mutually preferred ridgeline habitats would be comparable to levels within the HMA, with increasingly strong reductions in ground cover expected to adversely affect nest and brood-rearing habitats associated with the Magnolia area, the southern Cathedral Bluffs, and the entire length of Calamity Ridge. Progressive increases in herbivory, beginning in March and persisting through fall, concentrated on narrow stringers of suitable ridgeline and basin habitat would be expected to rapidly reduce the density and height of concealing interstitial cover before the onset of nesting (mid-April-early May), and in combination with livestock turnout later in the nesting cycle, with increasingly severe reductions through the entire brood period. Prior to five weeks of age (about late July), grouse broods are most reliant on effective ground cover to reduce their vulnerability to exposure and predation, and are not sufficiently mobile to relocate widely in search of more adequate cover. Failure to gather excess wild horses would, by 2015, deeply compromise the utility of favored nest and early brood habitat and contribute to reductions in annual reproductive performance and recruitment across 25% of the dusky grouse

habitat available in the Douglas and Piceance Basins.

In the long term (2019) wild horse numbers are expected to be over two times greater than the 2015 projected population (quadruple from current levels). Similar influences as discussed above would be expected however, as wild horse numbers increase, preferred forage resources (basin big sagebrush ridge lines and valley bottoms) will be used at a higher intensity and for prolonged periods, resulting in more rapid changes in vegetative composition (i.e., conversion to annual dominated communities) with greater use of previously unexploited resources. Continued high intensity, season-long grazing may lead to an irreversible (without some form of management intervention) alteration in vegetative composition within eight years - the ramifications of which, as mentioned above, may influence dusky grouse populations throughout Piceance and Douglas Basins.

Raptors and non-game wildlife: It is believed that increasing intensity and duration of yearlong, and particularly growing season-long, grazing use attributable to increasingly large and expansive wild horse populations would, by 2015, result in the widespread deterioration of ground cover conditions across 40-50% of the sagebrush and mixed shrub habitats available in the WRFO south of the White River. These impacts would be expected to nearly double should gather efforts be postponed until 2019 with rangeland deterioration more intensified in high use areas (ridge lines and valley bottoms). The consequence of these effects on non-game bird and small mammal habitats and populations with an affinity for well developed herbaceous understories, including their indirect role in maintaining associated raptor populations, would be identical to the discussions for Alterative D in the *Migratory Bird* and *Threatened, Endangered, and Sensitive Animal* (i.e., Brewer's sparrow and sagebrush vole) sections.

Wildlife, Aquatic

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. The watershed-wide implications of an unregulated wild horse population on the project area's aquatic communities are addressed in Alternative D, *Threatened, Endangered, and Sensitive Animal Species* section. In circumstances such as the lower five miles of Yellow Creek where coincident wild horse use is indicated as a factor in declining watershed or channel-specific conditions, it is likely that direct and indirect grazing-related effects would become more pronounced with time, both in reaches occupied by fish and amphibians and upstream systems that contribute to the fishery (e.g., Stake Springs, Corral Gulch, Duck Creek). Similarly, the consequences of season-long grazing use added to seasonal livestock use in the Cathedral Creek drainage would increase the risk and likelihood of herbivory-related effects compromising the utility and function of 6.5 miles of CRCT habitat (over 40% of occupied habitat within the WRFO). Elevated sediment levels arising from grazing-induced channel damage, by accumulating in and filling beaver ponds in these high-gradient, erosion-prone systems, would progressively accelerate the rate of dam breaches that, once beyond the capacity of the system, would result in adverse channel adjustments (both upstream and downstream in Yellow Creek, and Cathedral, Soldier and Lake Creeks) that would be largely incompatible as habitat for aquatic vertebrates (i.e., straightened, entrenched channels).

Migratory Birds

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Deferring wild horse gathers for four to eight years would prolong and exacerbate direct and indirect wild horse-related effects on migratory bird populations. With no effective means of biological control, wild horse populations and the influences they exert on migratory bird habitat would continue to expand and intensify each year in geometrically increasing increments. Assuming no interim management response, current forage use (AUMs) attributable to livestock (7,178 AUMs) and wild horses (4579 AUMs) within the HMA would increase at an average annual rate of about 10% through 2019 (i.e., total use 43% greater than 2010 pre-gather). Wild horse contributions to the overall livestock/ wild horse grazing load in the HMA would increase from about 40% presently to about 58% by 2015 and 73% by 2019 (average annual increase of 10%). Similar effects would take place on those ranges occupied by wild horses outside the HMA.

In particular, shrubland communities within two miles of water would be subject to increased herbivory during or prior to the migratory bird nesting season (April through August). Strong reductions in the density and height of herbaceous ground cover from ungulate grazing in the short term would be sufficient to depress nest success and/or breeding densities of shrubland associated birds (as discussed above). Because water is generally well distributed across the HMA, reductions in the availability of intervening herbaceous cover as forage and cover during nesting and the rearing of young would be evident in the short term across up to 7% of sagebrush communities within the Douglas Creek watershed (6,500 acres) and up to 26% of those within the Piceance Creek watershed (42,000 acres).

In the longer term, persistent patterns of growing season use on affected shrublands would continue to alter the composition of herbaceous understory communities, with increasing expression of annual (cheatgrass, mustards), introduced (Kentucky bluegrass), or grazing tolerant species such as blue grama or Sandberg bluegrass, which fail to offer comparable persistence, structure, or production as substrate for invertebrate prey and/or supplemental cover for reproductive functions. Because lands that have shifted to such states can generally produce one-quarter to one-half the herbaceous forage as bunchgrass dominated communities, wild horses and cattle would not only make exaggerated use of forage sources near water, but would be compelled to seek and make increasingly heavy growing season demands on forage further from water. Considering the potential for high rates of change in grazing use expression attributable to wild horses (expanse and intensity of use), it is believed that current breeding bird populations would rapidly manifest the progressive accumulation of bottomland and upland ridgeline and basin habitats in suboptimal condition by persisting at densities well below potential (e.g., 50% or less). In the context of nesting habitat, it is likely that by 2015 widespread deterioration of ground cover conditions would be evident across 40-50% of the sagebrush and mixed shrub habitats available in the WRFO south of the White River. By 2019 these impacts would be expected to nearly double as the overall grazing load will have exceed allotted AUMs within the HMA by 2-3 times, with wild horse use increasing 4 -5 times from current use.

Special Status Species

Impacts resulting from gather operations under this alternative would be identical to those

identified within Alternative A and B. Deferring wild horse gathers for an indeterminate period would prolong and exacerbate direct and indirect wild horse-related effects on certain populations of special status animals. With no effective means of biological control, wild horse populations and the influences they exert on these animals and their habitats would continue to expand and intensify each year in geometrically increasing increments.

Aquatic species, including fish and amphibians**:** Exponential increases in wild horse populations would be sustained in the short term both inside and outside the HMA. Total forage use attributable to current wild horse numbers (5,600 AUMs) would increase at an average annual rate of about 24% through 2015 (i.e., total use 2.4 times that of 2010 pre-gather). Wild horse contributions to the overall livestock/wild horse grazing load in the HMA would increase from about 40% presently to about 58% by 2015 and 73% by 2019 (average annual increase of 10%). Similar effects would take place on those ranges occupied by wild horses outside the HMA (264,000 acres). By 2019, wild horse numbers will be four times higher than current levels and the combined wild horse and livestock grazing load will have exceeded the allotted AUMs within the HMA by 2-3 times.

As forage conditions on preferred use and concentration areas decline from increasing growing season use, wild horses and cattle would be compelled to seek forage increasingly further from water. By 2015 and under no restraint, wild horse populations associated with the HMA (inside and adjacent) would require about 2.4 times the amount of forage currently consumed. Because lands in degraded ecological status (e.g., consistently preferred use areas) can generally produce one-quarter to one-half the herbaceous forage as bunchgrass dominated communities, surrounding range subject to increasingly heavy or further season-long grazing use by wild horses would need to expand at a calculated average rate of about 30% per year to meet the annual increase in wild horse numbers and forage demand.

As herbaceous ground cover and composition deteriorates, overland erosion rates would increase incrementally, particularly from that accumulating acreage subjected to concentrated season-long grazing use from wild horses. By 2015, these effects would probably become evident across up to 75,000 acres of big sagebrush and mixed shrub habitats outside the HMA and about 50,000 acres inside the HMA, and would account for about 50% of the these shrubland types in the WRFO south of the White River. These numbers are expected to nearly double by 2019. As gathers are consecutively postponed, these lands would contribute increasingly to sediments delivered to tributaries of the lower White River and its Colorado pike-minnow critical habitat, both in rate of delivery and areal extent. Although unlikely that excessive sediment loads in these systems would instigate chronic or widespread channel instability and bank erosion in the White River (at least through 2015 when overall livestock/wild horse grazing use is calculated to exceed current use levels by 43%), a long term trend would be established that would eventually lead to measurable increases in sedimentation of gravel substrates as spawning sites and sources of invertebrate production (as prey), water temperature (with increased channel width and declining water depth) and reductions in the utility or availability of important channel structure such as bank undercuts, backwaters and overflow channels. By 2019, at which time overall livestock grazing is projected to exceed current levels by 130% (2-3 times greater), this alternative would have the potential to adversely influence Colorado pike-minnow critical habitat, and depending on circumstances, may prompt further Endangered Species Act

consultation with the USFWS. Sediment-related impacts to the lower White River would also involve a number of BLM-sensitive fish that inhabit the lower White River, including roundtail chub, flannelmouth sucker, and bluehead sucker.

In circumstances such as the lower five miles of Yellow Creek where coincident wild horse use is indicated as a factor in declining watershed or channel-specific conditions, it is likely that direct and indirect grazing-related effects would become more pronounced with time, both in reaches occupied by fish and amphibians and upstream systems that contribute to the fishery (e.g., Stake Springs, Corral Gulch, Duck Creek). Similarly, the consequences of season-long grazing use added to seasonal livestock use in the Cathedral Creek drainage would increase the risk and likelihood of herbivory-related effects compromising the utility and function of 6.5 miles of CRCT habitat (over 40% of occupied habitat within the WRFO).

Greater sage-grouse**:** In the short term (through 2015), wild horses would continue to occupy and incrementally intensify their influence on about 25% of the overall sage-grouse range associated with the PPR. Overall grazing load by livestock and wild horses would increase on about 9,000 acres of sage-grouse habitats within the HMA by an average 12% annually, reaching levels about 60% higher than current use by 2015, or about double the overall levels achieved at the higher end of AML.

Wild horses would persist in occupying about 13% of sage-grouse overall range outside the HMA. Annual increases in herbivory would be comparable to levels within the HMA, with increasingly strong reductions in ground cover expected to adversely affect about 6,000 acres of occupied nest and brood-rearing habitats on the Reagles, Pasture D, and Little Hills allotments. Progressive increases in grazing intensity concentrated on narrow stringers of suitable ridgeline and basin habitat would be expected to rapidly reduce the density and height of concealing interstitial cover at the earliest stages of nesting (late April-early May), and in combination with livestock turnout later in the nesting cycle, with increasingly severe reductions through the entire brood period. Prior to five weeks of age (about late July), sage-grouse broods are most reliant on effective ground cover to reduce their vulnerability to exposure and predation, and are not sufficiently mobile to relocate widely in search of more adequate cover. Failure to gather excess wild horses would deeply compromise the utility of at least 15,000 acres of occupied nest and early brood habitat and contribute to further reductions in chick survival and recruitment across 25% of the PPR habitat base by 2015.

In the long term (2019) wild horse numbers are expected to be over two times greater than the 2015 projected population (quadruple from current levels). Similar influences as discussed above would be expected however, as wild horse numbers increase, preferred forage resources (big sagebrush ridge lines and valley bottoms) will be used at a higher intensity and for prolonged periods, resulting in progressive deterioration of vegetative composition (i.e., conversion of big bunchgrass communities to more grazing tolerant Kentucky or Sandberg bluegrass types) and greater use of previously unexploited resources. As noted in Affected Environment; Special Status Species, sagebrush bunchgrass plant communities provide important vertical and structural components that aid in the concealment of nesting hens and young chicks. These structural components are greatly reduced in bluegrass dominated communities.

In the long term, continued high intensity, year-long grazing may lead to an irreversible (without some form of management intervention) alteration in vegetative composition - the ramifications of which, as mentioned above, would greatly jeopardize an already fragile sage-grouse population.

Bald eagle**:** Wild horse populations persistently elevated above AML and their influence on upland habitat conditions would have little, if any, measurable influence on bald eagle riverine habitats or use functions in the short term (through 2015). Although the failure to regulate wild horse populations and allowing numbers to exceed AML by a factor of 2-3 would be undoubtedly detrimental to big game habitat quality in the project area, it is unlikely that short term population level effects would be sufficiently responsive to measurably reduce carrion or alternate prey sources available for bald eagle use in the White River valley. Deferring the gather until 2019 is not expected to have any substantive influence on bald eagle populations along the White River.

Brewer's sparrow and sagebrush vole**:** Brewer's sparrows are addressed integral with the Migratory Birds section. In this section, the implications of increasing numbers of wild horses and season-long grazing on migratory birds is directly applicable to small mammals that depend yearlong on well-developed native forms of herbaceous ground cover as sources of forage and cover, namely the sagebrush vole. Similar to breeding bird populations, sagebrush voles may continue to persist in sagebrush and mixed shrub stands with degraded understories, but at densities and with reproductive performance much reduced from potential. Depressed reproductive performance and long term declines in populations of these sagebrush associates may be subtle, but considering the current distribution of wild horses in the WRFO, may extend across up to 50% of the shrubland types south of the White River. By 2019 total AUMs (both wild horse and livestock) will be 2-3 times greater than allotted AUMs within the HMA. Impacts to non-game species would be similar however it is expected that population declines albeit subtle may become more expansive.

White-tailed prairie dogs, Great Basin spadefoot, northern goshawk, and bats**:** Impacts to these species would be identical to those discussed in Alternative C.

4.7.4 EFFECTS ON LIVESTOCK GRAZING

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Additionally, under this alternative, competition for limited water and forage resources between livestock and wild horses would continue to increase. In those grazing allotments within the HMA livestock operators would need to continue to take voluntary non-use of permitted AUMs in order to maintain TNEB. The BLM would not require grazing permittees to take this non-use, and it is likely that the range within the HMA would quickly be overstocked. As forage resources become unavailable to wild horses due to overpopulation, wild horses would expand their range to areas outside of the HMA. During the first deferral period (2011-2014) wild horses would likely expand into 12 additional

allotments outside of the HMA, and 5 additional pastures within the Square S allotment outside of the HMA which 8 permittees are authorized to graze cattle and sheep (see Map 1-1). Allotment management plans and grazing schedules for these allotments were not developed with wild horse grazing occurring within the allotment as well as livestock grazing. Due to the season long grazing patterns of wild horses, it is likely that these operators would have to make high levels of non-use within these allotments in order to avoid range degradation. This non-use would not be required; the BLM would instead have to rely on voluntary non-use by livestock operators in order to maintain a TNEB.

Under this alternative not conducting gather activities until 2019 would be similar to those impacts as were identified within Alternative C, however, with no required reduction of livestock grazing, expanding wild horse populations would become increasingly displaced from the HMA in an effort to find more available forage and water resources. The BLM would rely on voluntary non-use to avoid rangeland degradation both inside and outside of the HMA. As lands fail to meet rangeland health standards, non-use would become required which would likely be after the rangelands have transitioned from the DPC to the less desirable plant communities and an imbalance with TNEB exists. The BLM would also rely on private water sources for wild horses to sustain the increased wild horse population. If private landowners were unwilling to allow use of water on private land by wild horses, the available water on public land would be over utilized by wild horses, and grazing permittees would no longer be able to rely on these sources for livestock.

4.7.5 EFFECTS ON WILD HORSES

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. The current population of wild horses would continue to increase at a rate of 20% annually, and exceed the carrying capacity of the range. There would be no active management to control the size of the population at this time. Table 4-10 provides the projected population increase over the next 11 years based upon the 2010 inventory and 20% growth rates. The BLM currently estimates that every four years the wild horse population would double. This alternative poses the greatest risk to the health and viability of the wild horse population, wildlife populations, water and the vegetative resources.

The BLM anticipates that the wild horse population would increase to approximately 382 by July 2011, (February/March 2010 inventory counted 265 wild horses within the HMA) and would continue to expand at a rate of approximately 20% (Table 4-10 and 4-11).

Table 4-10. Estimated Growth of wild horse populations within the HMA and associated AUMs.

Year (Fall)	Adult Wild Horses	20% Population Increase	AUMS
2010	318	64	3,816
2011*	382	76	4,579

2012	458	92	5,495
2013	550	110	6,594
2014	659	132	7,913
2015	791	158	9,495
2016	950	190	11,395
2017	1,139	228	13,673
2018	1,367	273	16,408
2019**	1,641	328	19,690
2020	1,969	394	23,628
2021	2,363	473	28,353

*****Now exceeding wild horse allocated AUMs (2,101) by two times plus.
** Now exceeding wild horse allocated AUMs (2,101) by nine times.

Table 4-11. Estimated Growth of wild horse populations outside of the HMA and associated AUMs.

Year (Fall)	Adult Wild Horses	20% Population Increase	AUMS*
2010**	138	28	1,656
2011	78	16	936
2012	94	19	1,123
2013	112	22	1,348
2014	135	27	1,617
2015	162	32	1,941
2016	194	39	2,329
2017	233	47	2,795
2018	279	56	3,354
2019	335	67	4,025
2020	402	80	4,830
2021	483	97	5,795

***** All AUMs identified are not allocated to wild horse populations outside of the HMA.
******2010 BLM completed a gather of wild horses outside of the HMA, removing 73 wild horses. This resulted in an estimated post gather population of 65 wild horses remaining outside of the HMA. A 20% growth rate was applied to determine the Fall 2011 estimated population of wild horses residing outside of the HMA boundaries.

If no wild horses were removed from within the HMA, the population would be expected to increase at a rate of 20% annually growing to a herd size of 791 wild horses by 2015. Table 4-10 and 4-11 above shows the population growth if no action is taken. Increased utilization on those sites showing high moderate, heavy and severe use would be expected to contribute to declining vegetative resource values. Those resource values would be anticipated to continue to decline to a point where vegetative resources would no longer support wild horse populations or wild horses would need to range further to acquire forage. As the wild horses range out further in

search of forage, utilization in terms of both intensity and duration will increase. The end result would be degradation of these vegetation communities in composition, productivity, and vigor which will require the wild horses to continue their search for forage. Based upon the current 2010 inventory and the vegetative monitoring that has been completed, this may account for some of the wild horses that were located outside of the HMA boundary.

The wild horse population would continue to increase until the depletion of forage and water resources as well as degradation of plant communities would result in decline of the body condition and health of the wild horse population, potentially resulting in catastrophic losses to the herd. Wild horses are not a self-regulating species and would continue to reproduce until their habitat could no longer support them. Usually the habitat is severely damaged before the wild horse population is abruptly impacted and experiences substantial death loss. Significant loss of the wild horses in the HMA due to starvation or lack of water would have obvious consequences to the long-term viability of the herd. Continued decline of rangeland health and irreparable damage to vegetative, soil and riparian resources would have impacts to the future of the HMA and all other users of the resources which depend upon them for survival.

4.7.6 EFFECTS ON CULTURAL AND PALEONTOLOGICAL RESOURCES

Cultural

The continued increase in wild horse numbers would cause a corresponding increase of related negative impacts to cultural resources, inside and outside of the HMA. Areas of band concentration would undergo increased trampling of resources, and standing archaeological features would see increases in rubbing and congregating. Increased grazing pressure and reduction in vegetation cover would result in increased soil erosion which would significantly increase the loss of surface features and artifacts, and site contextual data.

In four years, or in eight years, when horses are gathered, the impacts from gather operations would be similar to those described in Alternative A.

Paleontology

Under Alternative D wild horse numbers would continue to increase. With the increase in wild horse numbers there would be a corresponding increase in wild horse concentrating and/or trailing in some areas or rubbing on exposed vertical exposures in other areas. Should those concentration or trailing areas happen to coincide with exposures of fossiliferous stone or rock outcrops there is an increased potential for damage to fossil resources from trampling of or rubbing on the exposed rock. The more wild horses there are, the greater the potential for trailing and concentrating on exposed horizontal surfaces or rubbing on vertical surfaces and the greater the potential impact to fossil resources.

Loss of fossil resources under this alternative would potentially be the most severe of the alternatives. The loss of fossil resources and scientific data that accompanies them is permanent and irretrievable.

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B.

4.7.7 EFFECTS ON AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Affects of Alternative D to paleontological resources in the Coal Draw ACEC are analyzed in the Paleontology section below. Affects of Alternative D to cultural resources in the Duck Creek ACEC are analyzed in the Cultural Resources section above. Affects of Alternative D to special status plant species habitat in the Duck Creek, South Cathedral Bluffs, and Upper and Lower Greasewood ACECs are analyzed in the Threatened, Endangered and Sensitive Plant Species section.

4.7.8 EFFECTS ON RECREATION

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B. Under this alternative gather operations would be deferred at least four years, but possibly up to eight years. As such, wild horse populations would increase every year that a gather is delayed. An increase in the wild horse population size would ultimately require more time to gather the specified number of wild horses to meet healthy herd levels. An increase in the time needed for gathering operations would increase exposure of gather operations to the public, primarily hunters, thereby increasing the potential for conflicts between gather personnel and the public.

Similar to the impacts from Alternative C, if wild horse populations increase to a point where they are displacing terrestrial big game wildlife as a result of diminished forage availability, a significant, long-term negative impact on the hunting experience would occur. Big game hunting on public lands also provides a significant contribution to the local economy. Any impact to the hunting experience from increased wild horse herd levels may also indirectly have a significant impact on the local economy.

One potential positive impact from this alternative is that an increase in wild horses would likely increase the ability of wildlife viewing enthusiasts and casual observers to locate and enjoy wild horses.

4.7.9 EFFECTS ON NOISE

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A and B.

4.7.10 EFFECTS ON WASTES, HAZARDOUS AND SOLID

Impacts resulting from gather operations under this alternative would be identical to those identified within Alternative A or B.

4.7.11 EFFECTS ON SOCIOECONOMICS

Impacts to socio-economic could directly affect a number of local economic sources. Increased wild horse populations that begin to adversely impact vegetative resources that may result in lower wildlife numbers or decreased AUMs allocated to livestock operations within Rio Blanco County could indirectly impact a number of socio-economic services within the county. While increased numbers of wild horses could make observation of wild horses easier for the public it is unlikely that this would offset the loss of economic development that results from livestock, and hunting related recreation activities.

The BLM expects that as wild horse populations expand there will be an increased likelihood of vehicle collisions along HWY 64 and County Road 5. This would increase the need for emergency services which places additional impacts to local resources within the county.

4.7.12 CUMULATIVE IMPACTS (ALTERNATIVE D)

SOIL, WATER AND AIR:

Cumulative impacts for Alternative D will be similar to those described in Alternative A with exception that impacts will occur over 320,208 acres.

VEGETATION RESOURCES

The CAA for vegetation resources includes the Piceance and Douglas/Evacuation Creek watersheds within Colorado. Cumulative impacts under Alternative D include increased season long use of upland and riparian vegetation by wild horses along with seasonal use by livestock and other wild grazing ungulates as well as continued disturbance and clearing of vegetation associated with ongoing mineral development. Resulting disturbance and overutilization contributes to degraded plant communities which shift to undesirable states providing limited forage and habitat resources and increased potential for widespread erosion, as well as increased risk of establishment and proliferation of noxious weeds within degraded communities.

WILDLIFE HABITAT & SPECIAL STATUS SPECIES

Terrestrial Wildlife: Cumulative impacts associated with Alternative D include the direct and indirect consequences of wild horse-related grazing effects on the availability and composition of big game forage and non-game forage and cover would represent strong additions to collective ungulate grazing-related effects on native vegetation communities and contribute widely to

vegetation clearing and occupation associated with past and ongoing mineral development and the proliferation of invasive and noxious weeds in the Piceance and Douglas/Evacuation Creek Basins within Colorado.

Migratory Birds: Progressive deterioration of native ground cover communities, particularly in sage-steppe habitats, would contribute to the cumulative range-wide deterioration and modification/loss of sagebrush habitats and birds associated with that vegetation type (e.g., Brewer's sparrow, dusky grouse, Virginia's warbler). More locally, these effects would add substantially to the direct occupation and longer term modification of shrubland nest cover that has and continues to occur from natural gas development and those areas entrenched with invasive annual weeds, introduced grasses, and noxious weeds in the Piceance and Douglas Creek basins, as well as that nesting habitat historically influenced by livestock, wild horse, and big game wildlife grazing use (e.g., diminishment of nest cover and forage substrate). Although unlikely to compromise population viability at the scale of Piceance or Douglas Basins in the short term, this alternative would likely prompt distribution discontinuities and severe localized reductions in the abundance of more specialized species, such as dusky grouse and green-tailed towhees.

Threatened, Endangered and Sensitive Animal Species: Sediments originating from those areas subjected to incompatible wild horse and livestock grazing regimens would contribute cumulatively to those sediments being produced and transported through the White River system and those tributary systems within the WRFO that support special status fish and amphibians from the development of oil and gas resources in the Piceance, Douglas, and Coal Oil Basins and from other public lands administered by the Field Office that fail to meet Public Land Health Standards 1, 2, and 3.

With regards to sagebrush obligate species, namely greater sage-grouse but also including Brewer's sparrow, sagebrush vole, Great Basin spadefoot: Progressive deterioration of native ground cover communities, particularly in shrub-steppe habitats, would contribute to the cumulative range-wide deterioration and modification/loss of sagebrush habitats and animals obligate to the type from oil and gas developments and the proliferation of invasive annual grasses. Rangeland deterioration expected under this alternative would contribute to annual conversion of BLM rangelands to invasive annuals throughout the western states (840,000 acres per year) (Department of Interior 2010). Habitat deterioration from grazing induced shifts in herbaceous understory composition; especially cheatgrass and its influence on altered fire regimes have eliminated vast expanses of sagebrush across the western US. For example, aggravated by cheatgrass domination, nearly 20% of sagebrush types within western sage-grouse range have burned since 1980 (Department of Interior 2010).

Wildlife, Aquatic: The CAA for aquatic wildlife encompasses the Piceance and Douglas/Evacuation Creek watersheds within Colorado. Sediments originating from those areas subjected to incompatible wild horse and wild horse-influenced livestock grazing use would contribute cumulatively to those sediments being produced and transported through the White River system and those tributary systems within the WRFO that support aquatic communities from the development of oil and gas resources in the Piceance, Douglas, and Coal Oil Basins and

from other public lands administered by the Field Office that fail to meet Public Land Health Standards 1, 2, and 3.

LIVESTOCK GRAZING

The CAA for livestock grazing includes all grazing allotments administered by the WRFO. Cumulative impacts to livestock grazing under Alternative D include increased competition for forage and water resources between livestock, wild horses and wildlife on up to 15 grazing allotments managed by WRFO. Additionally, livestock grazing operations of 12 grazing permittees authorized to graze livestock within and outside of the HMA would be impacted by the increased population and expanded distribution of wild horses.

WILD HORSES

Under Alternative D, the population of wild horses would continue to grow. Wild horse populations are not self regulating and would grow at a 20% rate until their habitat would no longer support the population. Habitat impacts could be exacerbated in the event of prolonged periods of drought, the competition for limited water and forage, wildland fire, and continued energy exploration/development could create conditions that could lead to high levels of mortality or morbidity caused by adverse conditions resulting from the increased numbers of wild horses on the range. This in turn may require an emergency gather to alleviate wild horse suffering and/or mortality. In general, adverse cumulative impacts for the no action alternative would include continued over utilization of vegetative and water resources.

CULTURAL RESOURCES AND PALEONTOLOGY

Cultural Resources- Under Alternative D, deferring wild horse gathers would result in significantly increased horse related impacts to cultural resources. The impacts would be severe inside the HMA and would extend outside the HMA as wild horses disperse further afield in search of forage and water. Irreversible and cumulative impacts would extend over a much wider geographical area as wild horses leave the HMA on this search. Impacts from trampling in the HMA would be especially severe as would loss of resources from the resulting loss of soil due to increased wind and water erosion.

Paleontological Resources- Under Alternative D, deferring horse gathers would result in the greatest level of horse related impacts to paleontological resources. The impacts would be the most severe in the HMA and would extend outside the HMA as horses disperse in search of forage and water. Irreversible and cumulative impacts would extend over a much larger geographical area as horses leave the HMA on the search for forage and water. Impacts from trampling and increased erosion would be especially severe within the HMA.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

The CAA under this alternative would be the area of anticipated for wild horse expansion outside of the HMA (Map 1-1). It is anticipated that continued expansion of wild horses outside of the HMA boundary could further impact those ACECs located within the HMA while similar

impacts from season long grazing outside of the HMA would affect additional ACECs like Ryan Gulch within the long-term (i.e. 2012). The cumulative affects to the resources for which the ACEC was designated are discussed in those sections above.

RECREATION

The CAA under this alternative would be the area of anticipated for wild horse expansion outside of the HMA (Map 1-1). Cumulative Impacts under this alternative would be similar to those of Alternative C.

NOISE

Cumulative Impacts under this alternative would be similar to those of Alternative A,

WASTES, HAZARDOUS AND SOLID

Cumulative Impacts under this alternative would be similar to those of Alternative C.

SOCIOECONOMICS

Under this alternative both Rio Blanco County and the State of Colorado may see a decrease in overall revenue from the region from both the agricultural industry as well as from the recreational hunting revenue.

4.8 MITIGATION & MONITORING

All mitigation and monitoring actions were built into the management actions that are common to all alternatives in Chapter 2. No additional mitigation or monitoring was identified.

CHAPTER 5 - CONSULTATION AND COORDINATION

5.1 PUBLIC HEARINGS

A public hearing for this proposed gather was held on March 1, 2011 at the BLM, White River Field Office, 220 East Market Street, Meeker, Colorado regarding the use of helicopters and motorized vehicles to capture wild horses within its jurisdiction. Fifteen members of the public were in attendance and recorded their comment into the record while other written comments were received and entered into the record for this public hearing. Specific opinions expressed or issues identified included: (1) the use of helicopters and motorized vehicles is inhumane and results in injury or death to significant numbers of wild horses and burros; (2) the use of helicopters and motorized vehicles is more humane, effective, and efficient, and results in less injury or death to significant numbers of wild horses and burros. The BLM reviewed its

Standard Operating Procedures in response to the views and issues brought up at the public hearing and determined that no changes to the SOPs were warranted.

5.2 COORDINATION WITH OTHER AGENCIES

A letter was received from the Colorado Division of Wildlife concurring with the proposed gather.

The BLM contacted the USFWS regarding BLMs determination of effects and Section 7 Consultation for this project (Personal Communication July 9, 2010).

5.3 NATIVE AMERICAN CONSULTATION

The WRFO 2011 annual Native American scoping letter was mailed to the Ute Tribe of the Uintah and Ouray Reservation, the Southern Ute, the Ute Mountain Ute, and the Eastern Shoshone on March 15, 2011. The letter informed the tribes of the proposed Piceance-East Douglas Herd Management Area Horse Gather, along with the other BLM Proposed Actions for the year, and no replies have been received. No current or past tribal consultations conducted by WRFO staff, whether by letter, phone, or in person, have identified any tribal concerns with horse gathers.

5.4 PREPARERS

Table 5-1. List of Preparers

Name	Title	Area of Responsibility
Heather Sauls	Environmental Coordinator	White River Field Office, Meeker, CO
Bob Lange	Hydrologist	Air Quality, Wastes, Hazardous or Solid, Water Resources, and Soils
Michael Selle	Archaeologist	Paleontological Resources
Kristin Bowen	Archaeologist	Cultural Resources
Jim Michels	Fuels Specialist	Forest and Fire Management
Lisa Belmonte	Wildlife Biologist	Migratory Birds, Threatened, Endangered and Sensitive Animal Species, Wildlife Terrestrial and Aquatic
Tyrell Turner	Rangeland Management Specialist	Invasive Species, Vegetation, Rangeland Management, Areas of Critical Environmental Concern, Threatened and Endangered Plant Species
Paul Daggett	Mining Engineer	Geology and Minerals

Table 5-1. List of Preparers

Name	Title	Area of Responsibility
Linda Jones	Realty Specialist	Realty Authorizations
Chad Schneckenburger	Outdoor Recreation Planner	Recreation, Wilderness, Visual Resources, Access and Transportation, Lands with Wilderness Characteristics
Melissa J. Kindall	Range Technician	Wild Horses, Wetlands and Riparian Zones
James Roberts	Associate Field Manager	Management Oversight
Kent Walter	Field Manager	Management Oversight
Jim Cagney	District Manager	Management Oversight
Erin Dreyfuss	Environmental Coordinator	Northwest Colorado District Office, Grand Junction, CO

5.5 DISTRIBUTION

This EA was made available for public viewing on the BLM public web site at: http://www.blm.gov/co/st/en/fo/wrfo/wrfo_wild_horses.html

A notice of availability and/or or hard copies of this EA was also sent to those who either commented during scoping, commented during the review and comment period, are interested public, and/or requested a copy of the EA, a copy of this list is available upon request.

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
White River Field Office
220 East Market Street
Meeker, Colorado 81641

In Reply Refer To:
4700

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Piceance-East Douglas Herd Management Area
Wild Horse Gather Plan Environmental Assessment
DOI-BLM-CO-110-2011-0058-EA

LOCATION OF PROPOSED ACTION

The Bureau of Land Management's (BLM) White River Field Office (WRFO) administers the analysis area which is located northwestern Colorado, approximately 25 miles west and south of Meeker and approximately 50 miles north and east of Grand Junction. The analysis area comprises approximately 426,132 acres or approximately 16 percent of the WRFO, and includes the Piceance-East Douglas Herd Management Area (HMA), and those areas outside of the HMA including the North Piceance Herd Area (NPHA) and where wild horses have been observed or relocated. The HMA encompasses 158,310 acres of federal land managed by the BLM, and 31,820 acres not managed by the BLM. All of the analysis is within Rio Blanco County, Colorado.

BACKGROUND

The White River Field Office (WRFO) has managed wild horses since the passage of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA). Within the analysis area the 1997 White River Resource Management Plan calls for management of wild horses within the HMA and the removal of horses from the NPHA.

The Appropriate Management Level (AML) in the HMA was established as a population range of 135-235 wild horses in the 2002 Piceance-East Douglas Wild Horse Herd Management Area EA, #WR-02-049, following an in-depth analysis of habitat suitability, resource monitoring and population inventory data. The AML upper limit is the maximum number which can graze based on detailed analysis of the available water, forage, and other multiple uses. A Herd Management Area Plan (HMAP) established site-specific management and monitoring objectives for the herd and its habitat in 1981. The WRFO Wild Horse Program Analysis updated that plan and Operational Plan dated July 27, 1999.

Based on existing inventories inside the HMA, the BLM has identified a need to balance wild horse populations with other resources, including wildlife habitat, livestock grazing, soil, water and vegetation resources. The BLM's determination of excess wild horses is based on evaluations of resource conditions, vegetation utilization, wild horse inventory data, livestock permitted use, livestock actual use reports, wildlife population data, and land use planning

allocations. The BLM currently has not allocated forage to wild horses outside the Piceance-East Douglas Herd Management Area. The wild horses residing outside of the HMA are in areas not designated for their long-term use, or areas where they were not "presently found" at the passage of the WFRHBA, and cannot be managed consistent with other resource use allocations**.**

FINDING OF NO SIGNIFICANT IMPACT

I have reviewed the Final Piceance-East Douglas Herd Management Area Wild Horse Gather Environmental Assessment (EA), DOI-BLM-CO-110-2011-0058-EA. After consideration of the environmental effects as described in the EA, and incorporated herein, I have determined that the Alternative A (Proposed Action), with the project specifications, including minimization or mitigation measures identified in the EA, would not significantly affect the quality of the human environment and that the preparation of an Environmental Impact Statement (EIS) is not required.

I have based this finding and conclusion on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and the intensity of the impact which are described in the EA. Therefore, the preparation of an environmental impact statement is not required for compliance with the National Environmental Policy Act of 1969.

Context: The Project is a site-specific action directly involving approximately 20 wild horse trap sites and two temporary holding facilities within the 426,132 acre analysis area. The Proposed Action does not in and of itself have international, regional, or state-wide importance.

Intensity: There is no evidence that the severity of impacts is significant**:**

1. The Proposed Action is expected to meet BLM's objective for wild horse management of maintaining a thriving natural ecological balance and multiple use relationship consistent with other resource needs. The EA considered both beneficial and adverse impacts of the gather and removal of excess wild horses from inside and outside of the HMA boundaries. Standard Operating Procedures 2010 (Appendix A) would be followed to minimize stress on wild horses and burros and impacts to other resources. BLM will remove excess wild horses from the project area; removed wild horses would be transported to wild horse and burro holding facilities and prepared for adoption, sale or long-term holding pastures.

2. The Proposed Action has no effect on public health or safety. The Standard Operating Procedures 2010 (Appendix A) as well as Guidance regarding distance of helicopter operations from persons and property during Wild Horse and Burro gather operations (Appendix F) would be used to conduct the gathers and they are designed to protect human health and safety, as well as the health and safety of the wild horses. The Proposed Action would have minimal affects to public health or safety.

3. The Proposed Action has no potential to affect unique characteristics such as historic or cultural resources. There are no wild and scenic rivers, or ecologically critical

areas present in the areas. There are no park lands, prime farmlands, wetlands, or wild and scenic rivers within the gather area. BLM will conduct archaeological site clearances prior to the construction of temporary gather sites and holding facilities. If WRFO discovers cultural resources in an area, a new location would be determined to set up temporary gather sites and holding corrals. BLM will not conduct wild horse gather activities within Wilderness Study Areas.

4. The BLM does not consider the effects of the Proposed Action on the quality of the human environment to be highly controversial, and effects of the gather are well known and understood. The effects that would occur from implementation of the gather are well known and understood based upon previous gathers. The WRFO did not identify any unresolved issues based on comments from public notification of the proposed gather. Comment response within the EA documents that all issues were addressed through the effects analysis. Some members of the public have the view that "no wild horses should be removed from any public lands" and advocate removal of livestock or letting "nature take its course." However, BLM has documented the effects of wild horse gathers on the quality of the human environment through the many years of management of wild horses and burros gathers and other population controls, and determined they are not highly controversial.

5. Possible effects on the human environment are not highly uncertain, and do not involve unique or unknown risks. The Proposed Action has no known effects on the human environment which are considered highly uncertain or involve unique or unknown risks. WRFO's EA effects analysis has documented the known effects on the human environment.

6. The Proposed Action is compatible with future consideration of actions required to improve wild horse management in conjunction with meeting objectives for wildlife habitat within the HMA. Implementation of the Proposed Action will remove all excess wild horse from areas in and adjacent to the HMA to achieve and maintain a thriving natural ecological balance and multiple-use relationship on the federally administered lands.

7. The Proposed Action is not related to other actions with individually insignificant, but cumulatively significant impacts. Future projects occurring within the gather area are evaluated through the appropriate NEPA process and analyzed under a site-specific NEPA document. The Proposed Action, Alternative A does not set a precedent for future actions, and is not related to other actions within the project area that would result in cumulatively significant impacts. Proper NEPA analysis would be completed for all future Proposed Actions. The current EA analyzes the anticipated Cumulative impacts that represent Past, Present and Reasonably Foreseeable Actions within the analysis area.

8. The Proposed Action has no potential to adversely affect properties listed or eligible for listing in the National Register of Historic Places, and would not cause loss or destruction of significant scientific, cultural, or historical resources. The proposed

action would not affect significant scientific, cultural, or historical resources. The WRFO would conduct a cultural resource inventory prior to gather site and corral construction to determine the presence of sites that are unclassified, eligible, or potentially eligible for listing. Archaeological site clearances and avoidance measures would ensure that loss or destruction of significant scientific, cultural, or historical resources does not occur.

9. The Proposed Action would have no effect on any other threatened or endangered species or habitat determined to be critical under the Endangered Species Act. Threatened, Endangered or Candidate plant species exist within the HMA. The WRFO would conduct a plant survey in accordance with the 2010 inventory protocol to determine the presence of Threatened, Endangered, or Candidate plant species prior to new gather site and corral construction within 100 meters of potential plant habitats.

10. The Proposed Action would not violate or threaten to violate any Federal, State, or local law or requirement imposed for the protection of the environment. The Proposed Action is in conformance with all applicable 43 CFR (Code of Federal Regulations). The Proposed Action would not violate the Migratory Bird Treaty Act or Endangered Species Act.

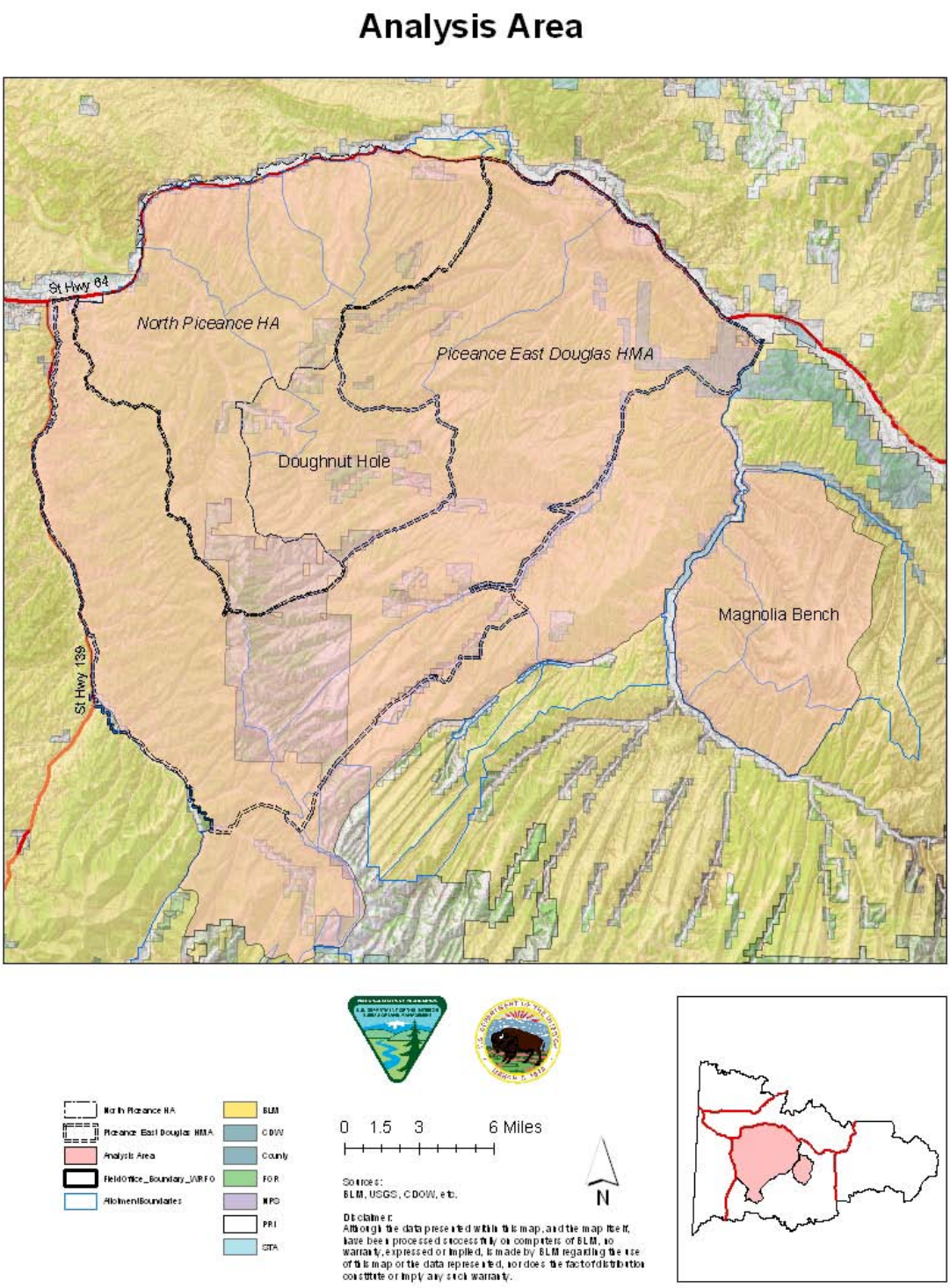
_____ _____

Kent E. Walter
Field Manager

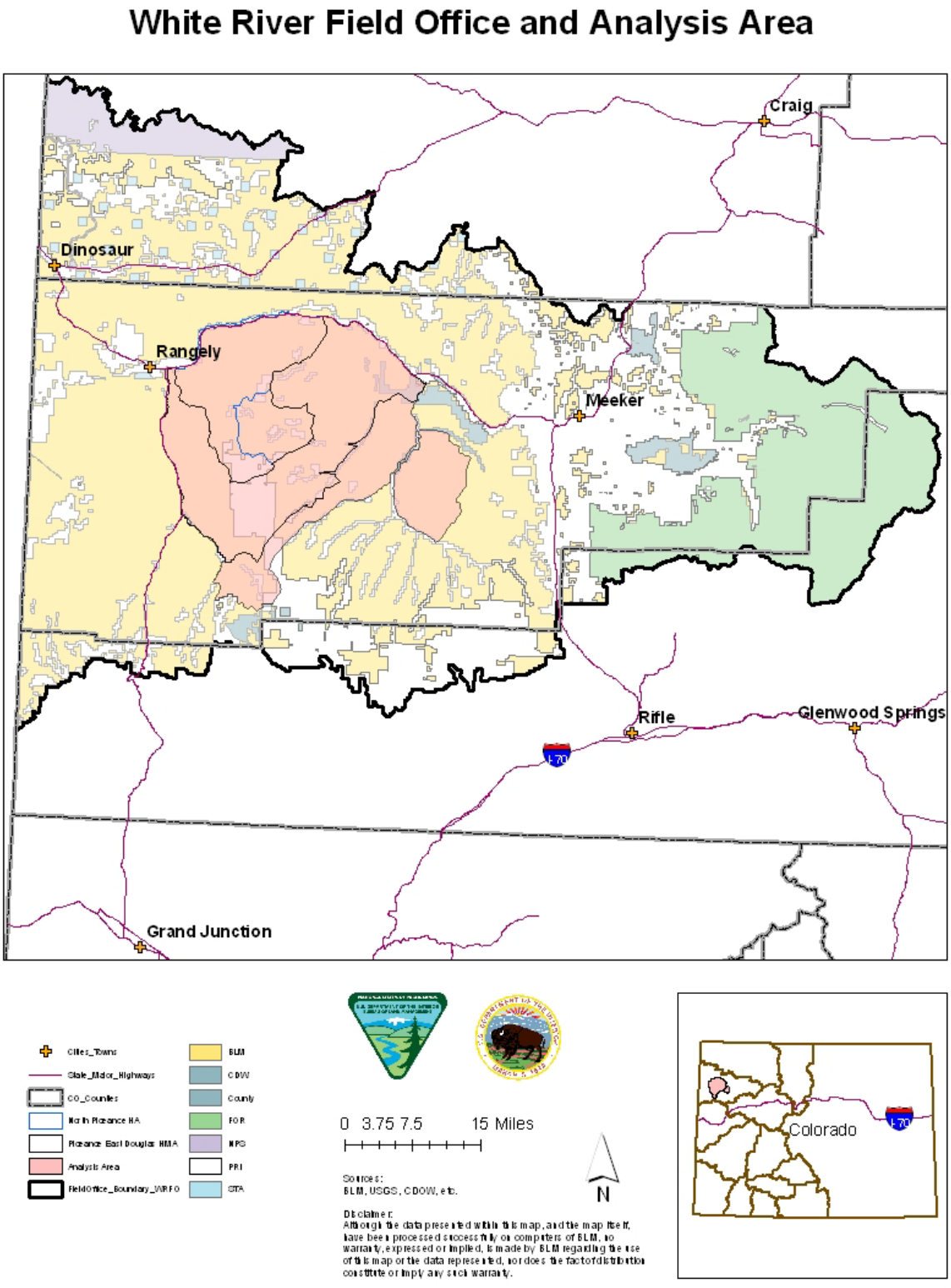
Date:

MAPS

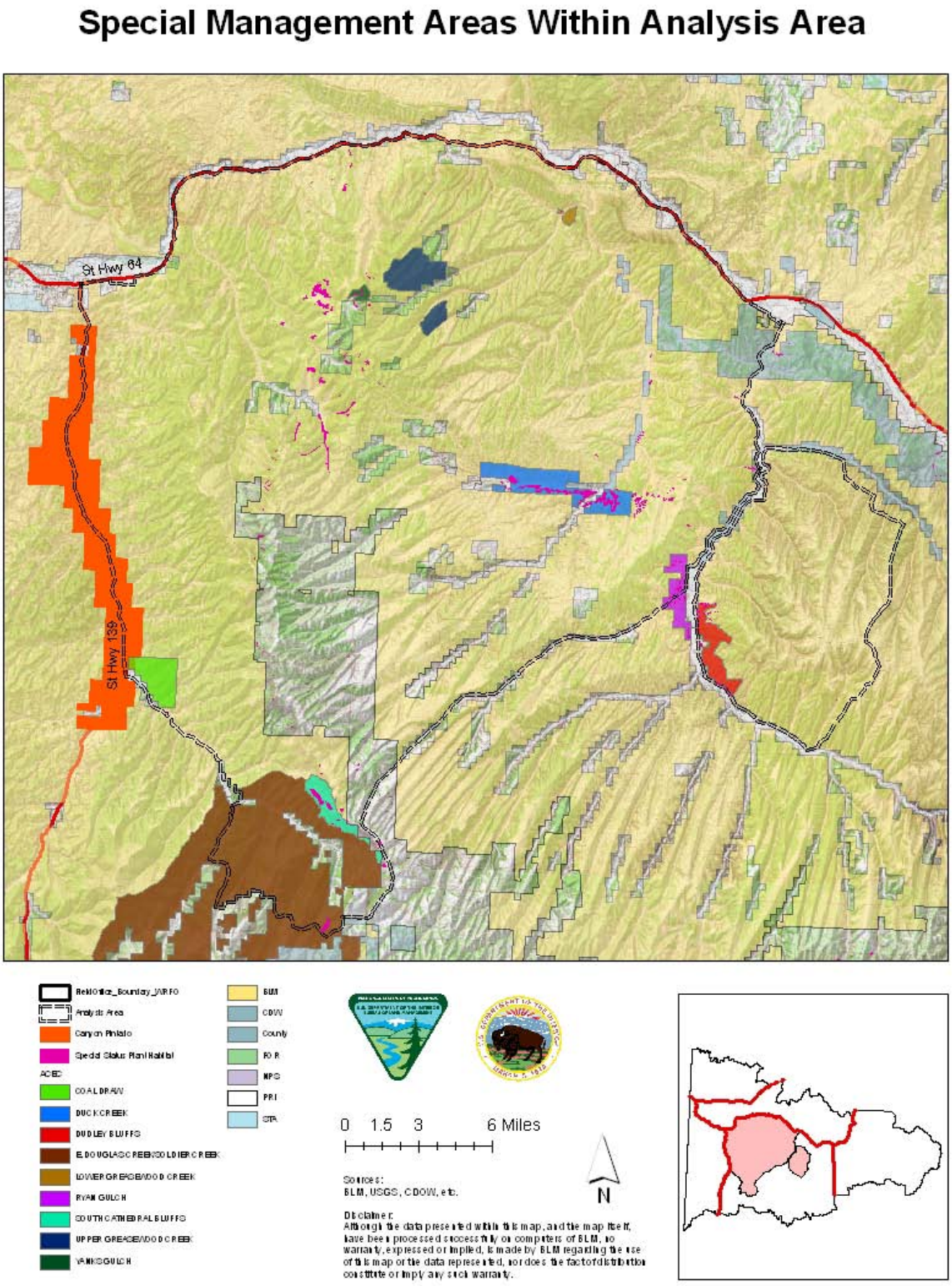
Map 1-1 Analysis Area (estimated greatest geographic extent of unmanaged wild horse population by 2021)



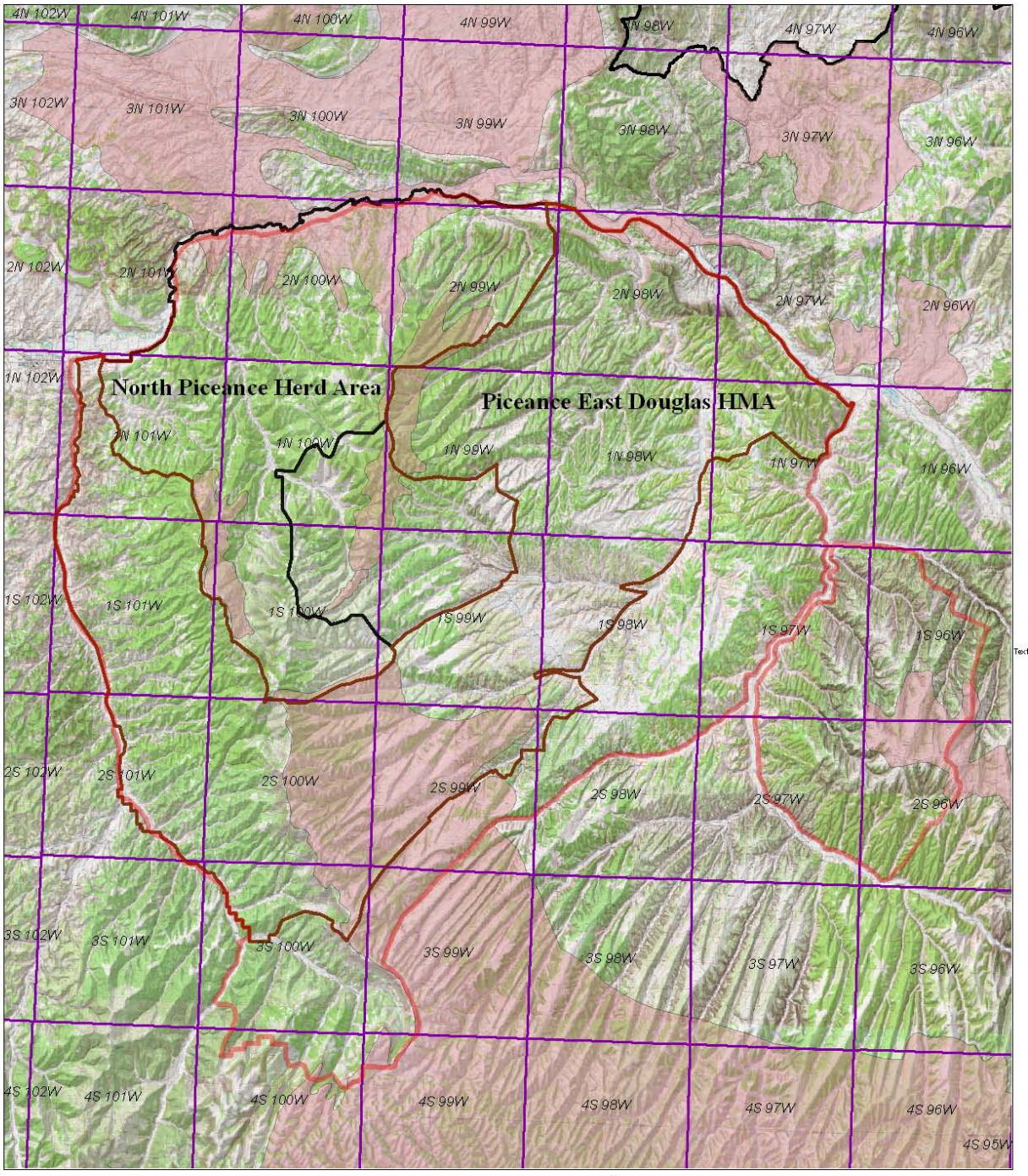
Map 1-2 White River Field Office with Area of Analysis



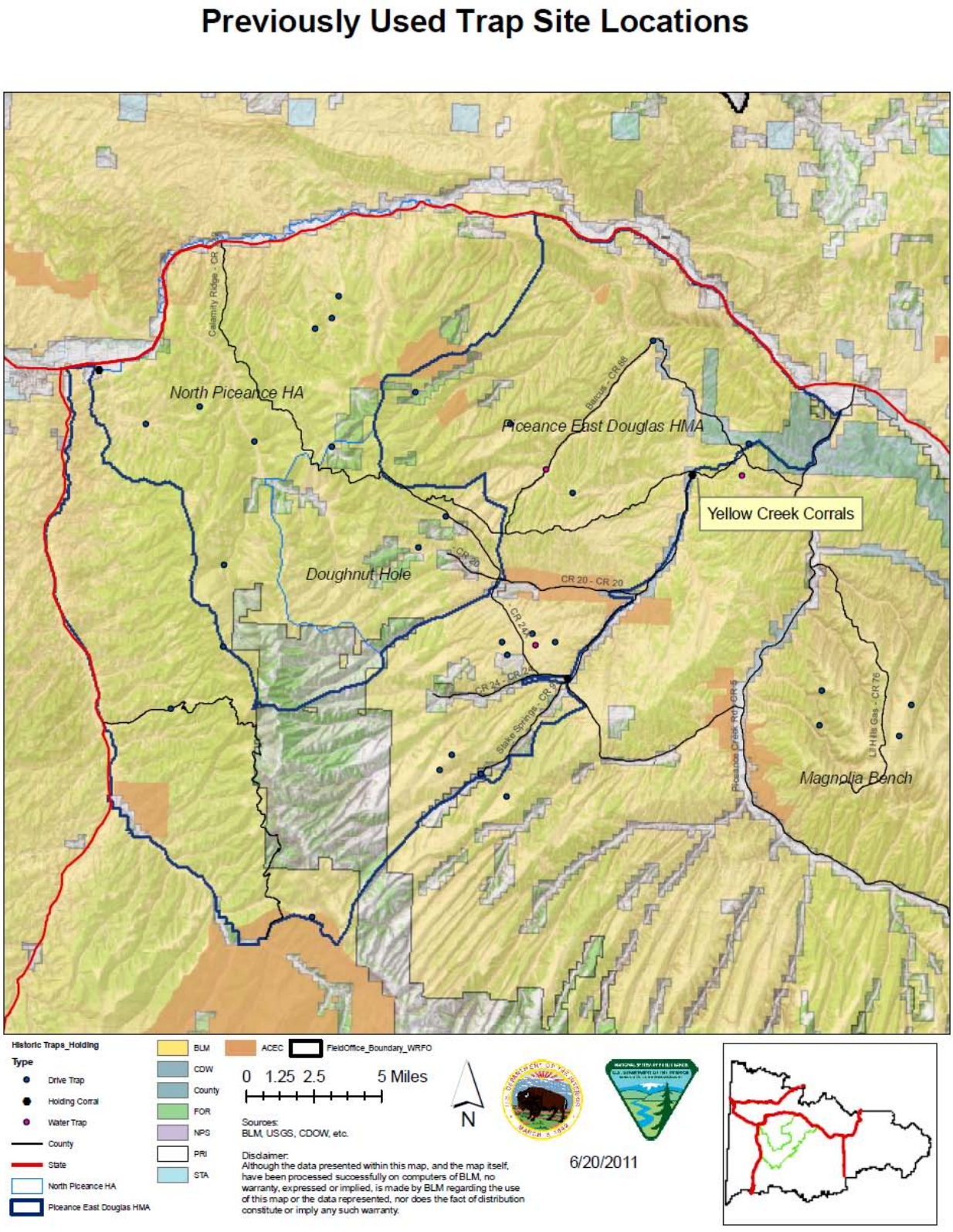
Map 1-3 Special Management Areas within Analysis Area



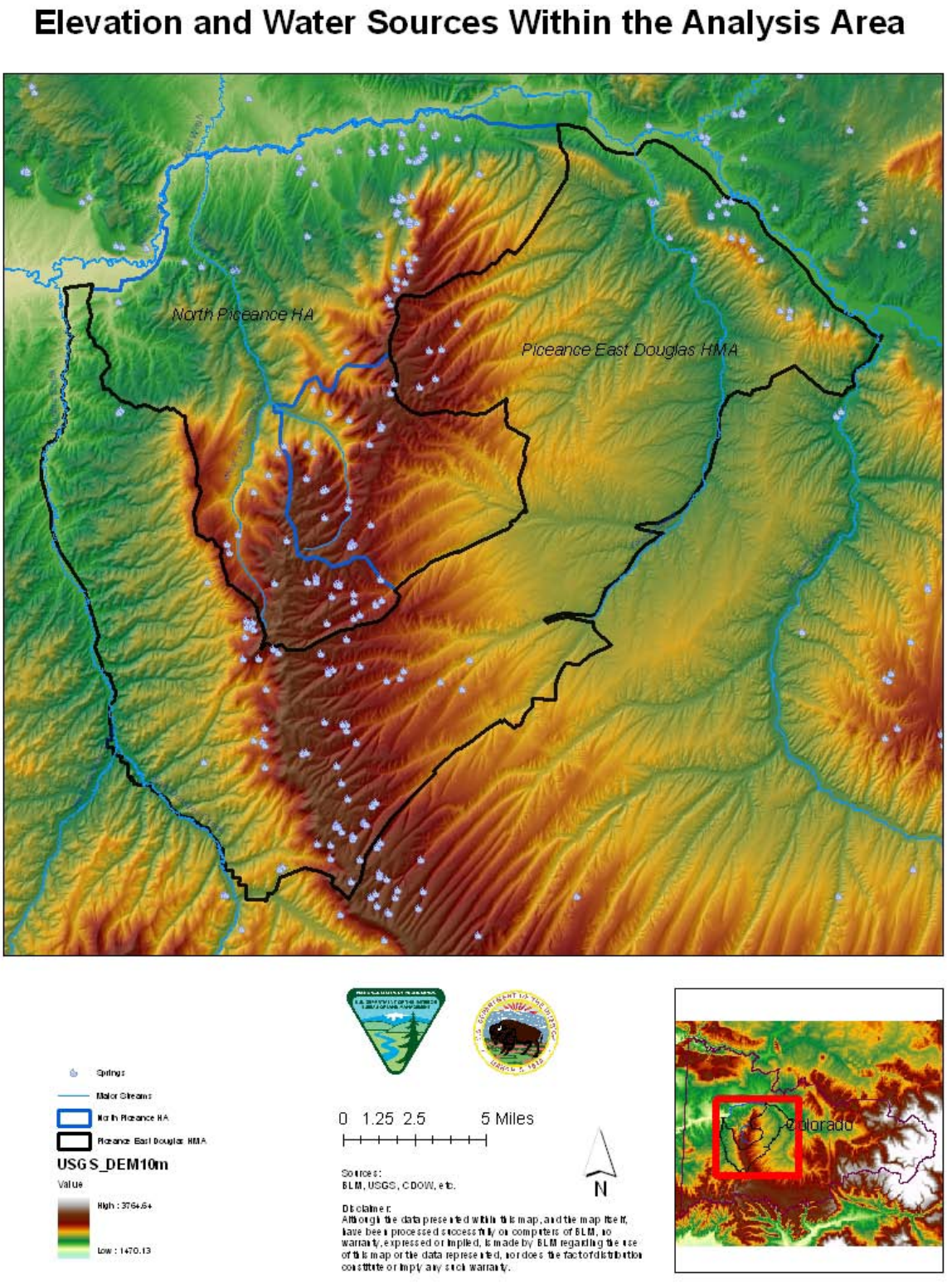
Map 1-4 Sage grouse Range within Analysis Area



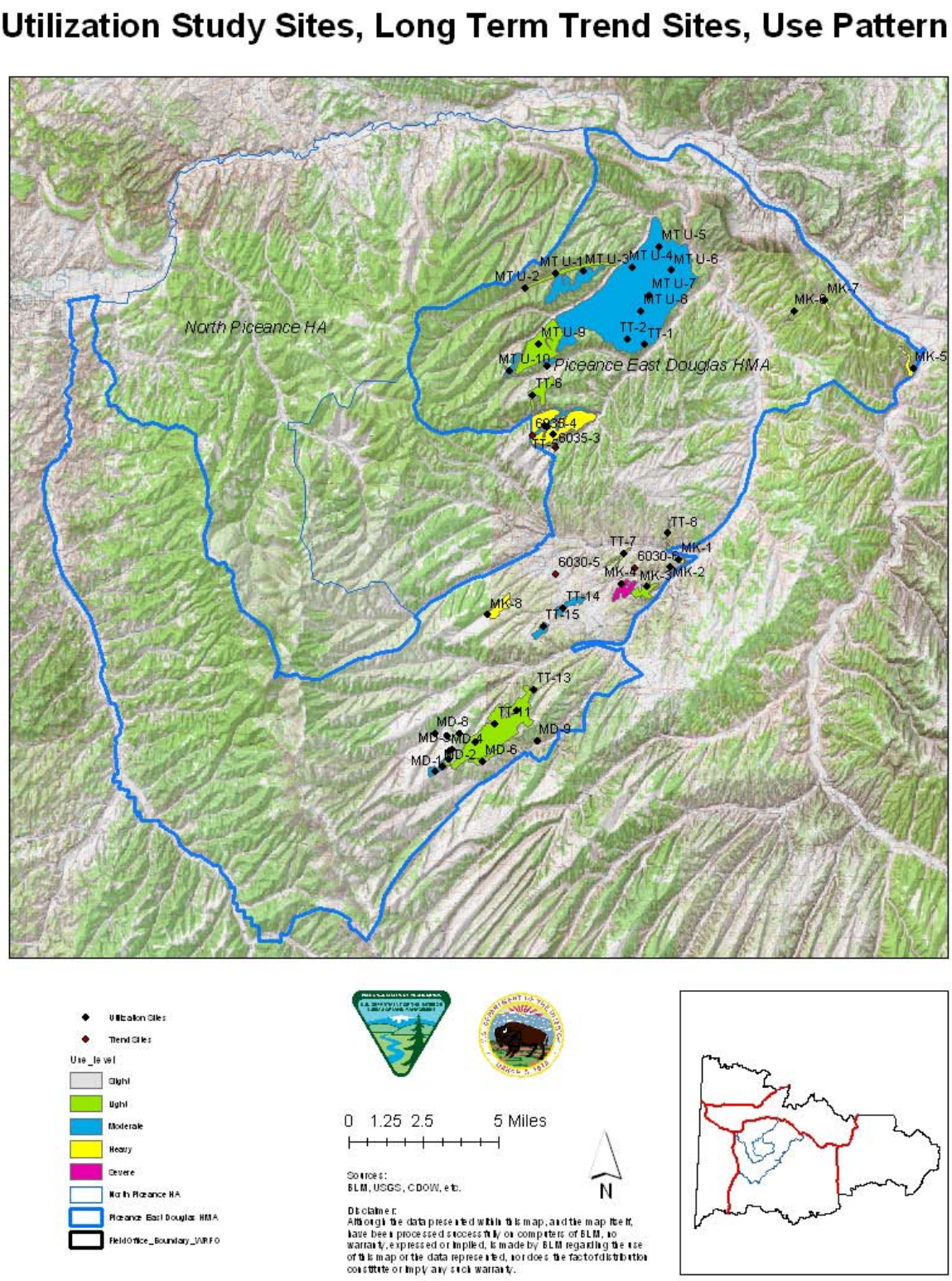
Map 2-1 Temporary Holding Facilities and Potential Trap Sites



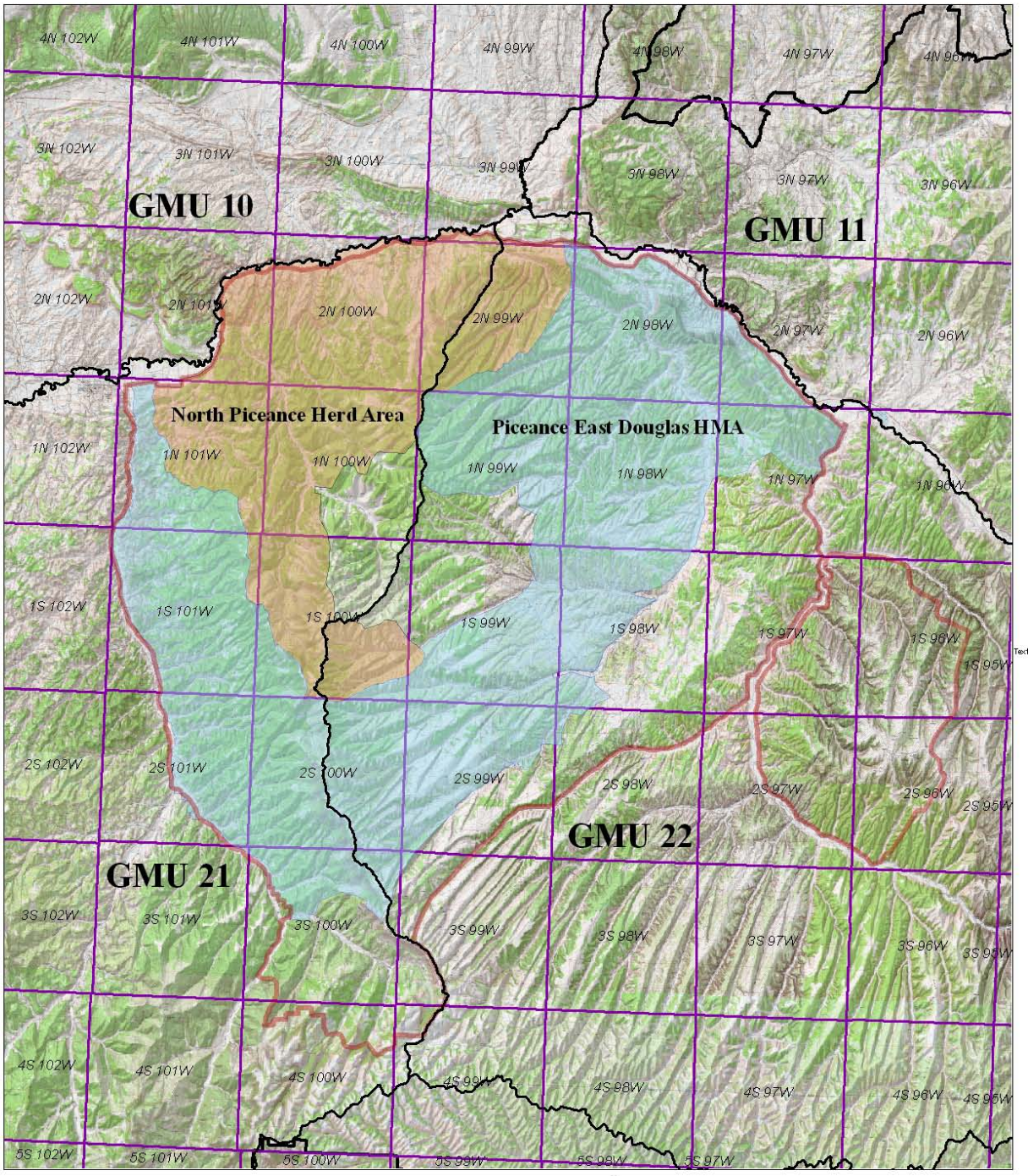
Map 3-1 Elevation Range and Water Sources within the Analysis Area



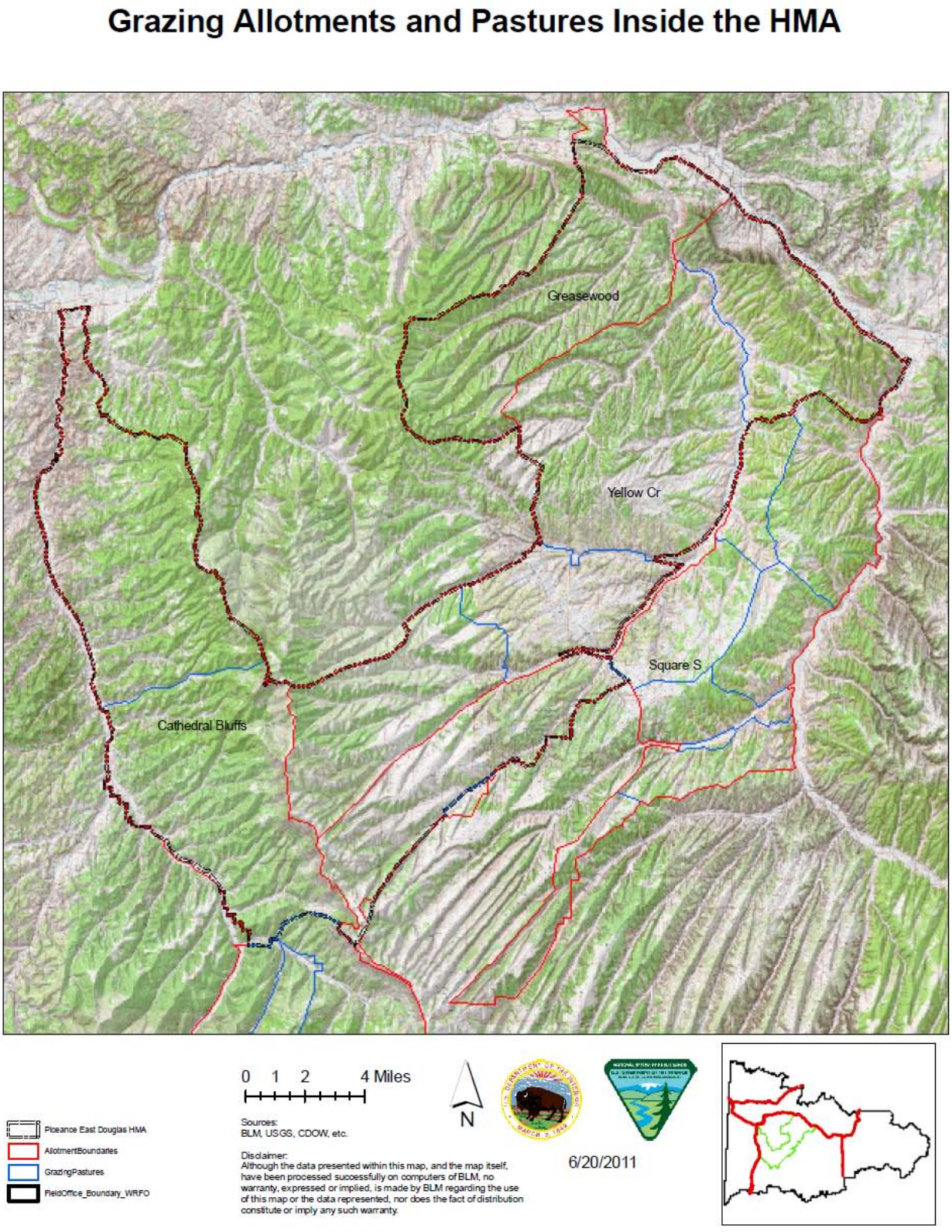
Map 3-2 Utilization Studies and Long Term Trend Studies within the HMA



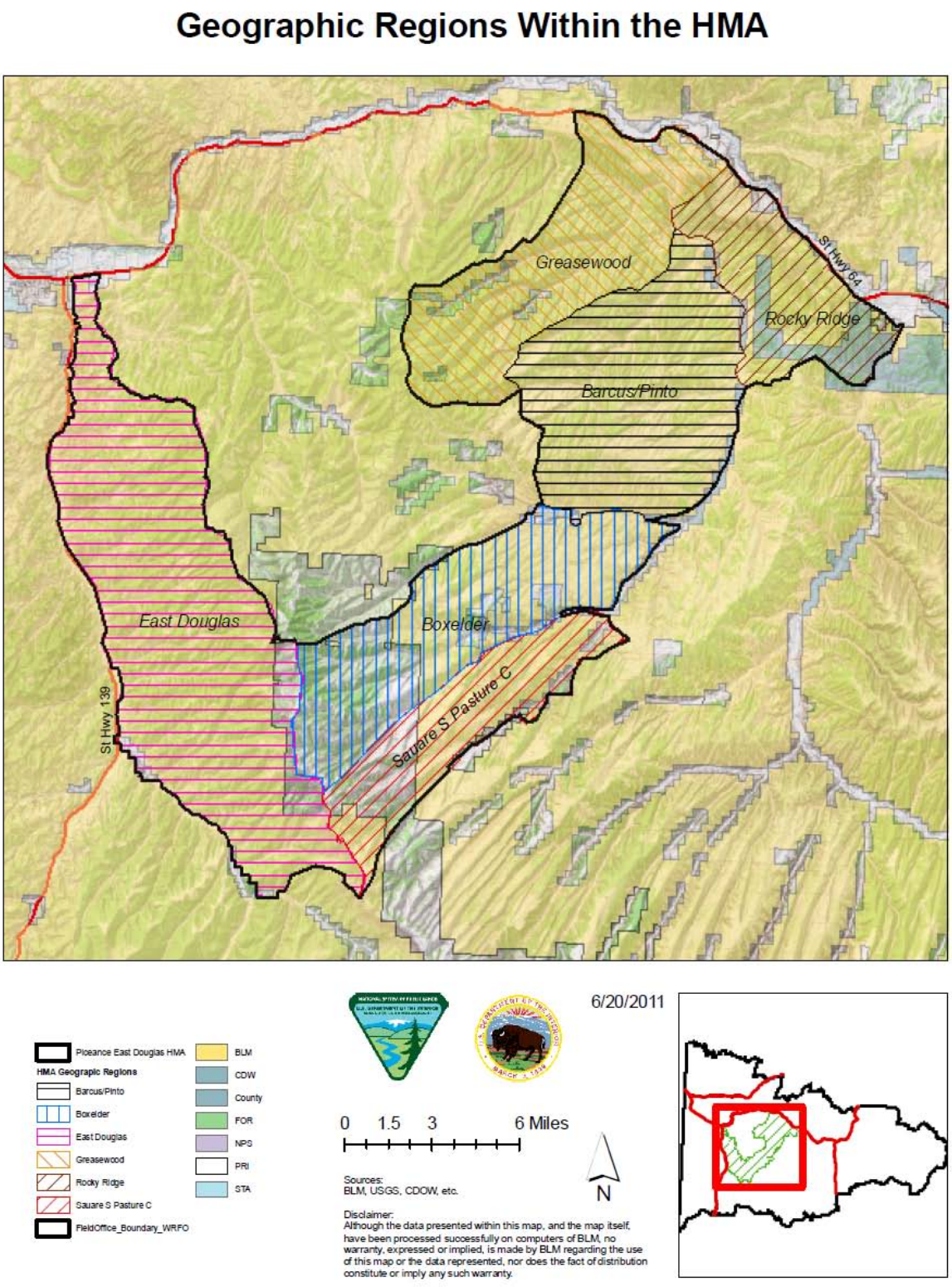
Map 3-3 Game Management Units within the Analysis Area



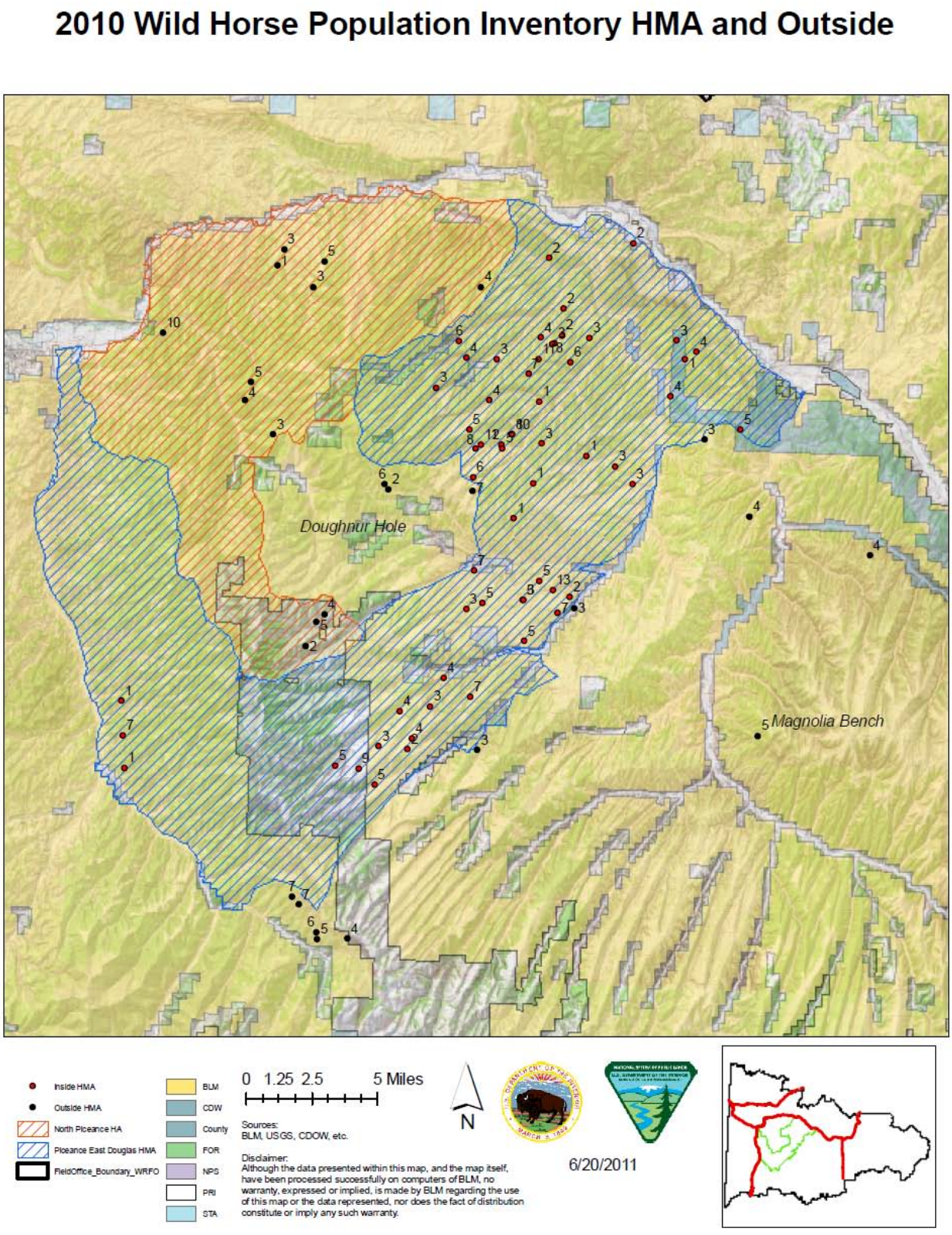
Map 3-4 Allotment Boundaries within the HMA



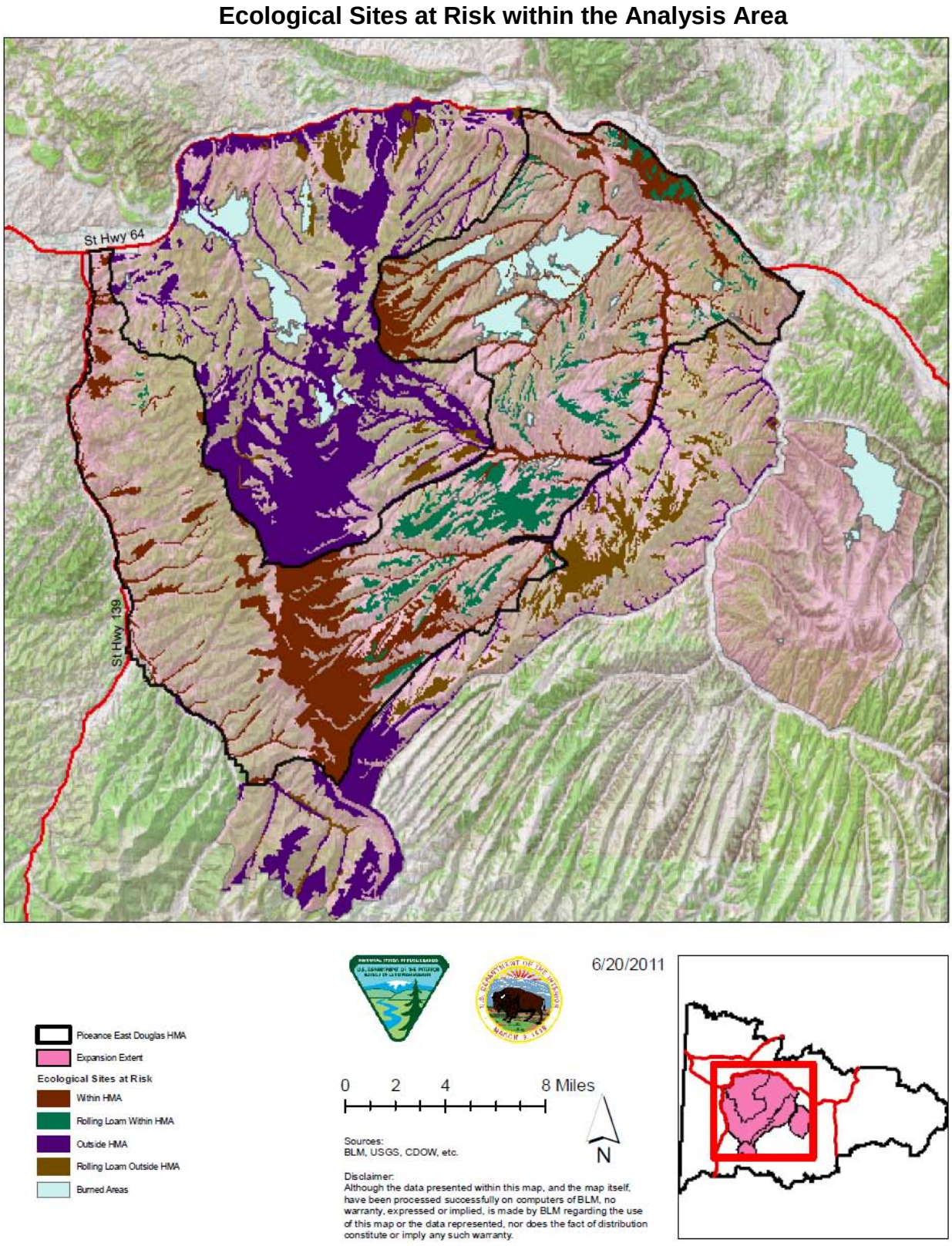
Map 3-5 Geographic Regions of Wild Horse Herd Distribution within the HMA



Map 3-6 Population Inventory



Map 4-1 Ecological Sites at Risk within the Analysis Area



APPENDIX A: Gather Policy, Selective Removal Criteria, and Management Considerations for Reducing Population Growth Rates

WO IM 2010-135

Attachment 1: Standard Operating Procedures for Wild Horse Gathers

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

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

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

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 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 (e.g., water or feed) to lure wild horses into a temporary trap.

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

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

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

   All 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. Under normal circumstances this travel should not exceed 10 miles and may be much less dependent on existing conditions (i.e. ground conditions, animal health, and extreme temperature (high and low)).

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 larger than 2”x4”.

   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.

   e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking or sliding gates.

4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.

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

6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or jennies with small foals, sick and injured animals, estrays or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite 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.

7. 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. The contractor will supply certified weed free hay if required by State, County, and Federal regulation.

   An animal that is held at a temporary holding facility through the night is defined as a horse/burro feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.

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

9. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.

10. Animals shall be transported to their final destination from temporary holding facilities as quickly as possible after capture unless prior approval is granted by the COR 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. 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. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the capture area

may need to be transported back to the original trap site. This determination will be at the discretion of the COR/PI or Field Office horse specialist.

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

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary trap. If this capture method is selected, 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 half hour.

   b. The contractor shall assure that foals shall not be left behind, and orphaned.

3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor, with the approval of the COR/PI, selects this method the following applies:

   a. Under no circumstances shall animals be tied down for more than one 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, if requested, 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 at least two (2) partition gates providing at least three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing at least 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 as much as possible during transport.

6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:

   - 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
   - 8 square feet per adult burro (1.0 linear foot in an 8 foot wide trailer);
   - 6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer);
   - 4 square feet per burro foal (.50 linear feet in an 8 foot wide trailer).

7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.

8. If the COR/PI determines that dust conditions are such that the animals could be

endangered during transportation, the Contractor will be instructed to adjust speed.

D. Safety and Communications

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

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

    b. The Contractor shall obtain the necessary FCC licenses for the radio system.

    c. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.

2. Should the contractor choose to utilize a helicopter the following will apply:

    a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.

    b. Fueling operations shall not take place within 1,000 feet of animals.

G. Site Clearances

No personnel working at gather sites may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage or otherwise alter or deface any archaeological resource located on public lands or Indian lands.

Prior to setting up a trap or temporary holding facility, BLM will conduct all necessary clearances (archaeological, T&E, etc). All proposed site(s) must be inspected by a government archaeologist. 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. 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.

I. 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 considerations will be to protect the health, safety and welfare of the animals being gathered and the personnel involved. The public must adhere to guidance from the on-site BLM 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.

APPENDIX B: Fertility Control Treatment:

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

1. PZP vaccine would be administered by trained BLM personnel.

2. The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18 gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14 gauge needle. These are 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.

3. 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.

4. 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.

5. 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.

6. 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 National Program Office (NPO) (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.

7. 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.

8. 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 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: Results of Population Modeling for Piceance-East Douglas Herd Management Area 2011

Population Model Overview

Population modeling is a tool designed to help BLM evaluate various management alternatives and possible outcomes for management of wild horses. The population model is not applicable for burros.

The WinEquus program, developed by Dr. Steven Jenkins at the University of Nevada at Reno was designed to assist wild horse and burro specialists evaluate various management alternatives that might be considered for a particular area.

The model uses data on average survival probabilities and foaling rates of horses to simulate population growth for up to 20 years. The model accounts for year-to-year variation in these demographic parameters by using a randomization process to select survival probabilities and foaling rates for each age class from a distribution of values based on these averages. This aspect of population dynamics is called environmental stochasticity, and reflects the fact that future environmental conditions that may affect horse populations cannot be known in advance. Therefore, each trial with the model will give a different pattern of population growth. Some trials may include mostly "good years", when the population grows rapidly; other trials may include a series of several "bad" years in succession. The stochastic approach to population modeling uses repeated trials to project a range of possible population trajectories over a period of years, which is more realistic than predicting a single specific trajectory.

The model can incorporate selective removal and fertility control treatment as management strategies. A simulation may include no management, selective removal, fertility control treatment, or both removal and fertility control treatment. BLM can specify many different options for these management strategies such as the schedule of gathers for removal or fertility control treatment, the threshold population size which triggers a gather, the target population size following a removal, the ages and sexes of horses to be removed, and the effectiveness of fertility control treatment.

Modeling was complete for the Piceance-East Douglas Herd Management Area (HMA), where BLM expects to only be able to gather 85% of the wild horses during gather operations. Population modeling was completed for all alternatives including the No Action - Defer Gather and Removal. Initial population age structures were used from the Garfield RFlat, NV initial age distribution 1997 data. All simulations used the survival probabilities and foaling rates supplied with the WinEquus population model for the Garfield Flat HMA. Survival data was collected by M. Ashley and S. Jenkins at Garfield Flat, Nevada between 1993 and 1999. Marked individuals were followed for a total of 708 animal-years to generate these survival probabilities.

Foaling rate data was collected by M. Ashley and S. Jenkins at Garfield Flat, Nevada between 1993 and 1999. Marked females were followed for a total of 351 animal-years to generate these data on foaling rates.

These initial populations for the HMA were entered into the model and put though simulations that included Fertility Control and Sex Ratio Adjustment with Gather (Alternative A), Gather Only (Alternative B), Gather Only in 2016 (Alternative C), and No Action - Defer Gather and Removal of Excess Wild Horses Short Term and Long Term. (Alternative D). The simulations were run for 100 trials for the eleven years. For each simulation, a series of graphs and tables were provided which included the "most typical" trial, population sizes, growth rates, and gather numbers.

Results of Population Modeling

Out of the 100 trials in each simulation run, the model tabulated minimum, average, and maximum population sizes. The model was run for a period of eleven years from 2010 to 2020, and gives output through 2020. These numbers are useful to make relative comparisons of the different alternatives, and potential outcomes under different management options. The lowest, median and highest trials are displayed for each simulation completed. This output, together with the time series and most typical trial graphs are useful representations of the results of the program in terms of assessing the effects of the management alternatives because it shows not only expected average results but also extreme results that might be possible. The minimum population size in general reflects the numbers that would remain following management or random environmental impacts. The maximum population size generally reflects the population that existed prior to the gather, and in many cases that figure would not be exceeded during the ten years of the simulations. Half of the trials were greater than the median and half of them less than the median.

Table 1. Population Size – Fertility Control and Sex Ratio Adjustment with Gather (Alternative A)

Estimated Population Sizes in 11 Years			
Trial	**Minimum**	**Average**	**Maximum**
Lowest	111	187	267
Median	152	205	294
Highest	174	223	466

Table 2. Population Size – Gather Only in 2011 (Alternative B)

Estimated Population Sizes in 11 Years			
Trial	**Minimum**	**Average**	**Maximum**
Lowest	114	220	339
Median	149	233	420
Highest	169	259	569

Table 3. Population Size – Gather Only in 2016 Manage for Wild Horses (Alternative C)

***Estimated Population Sizes in 10 Years versus 11 Years**			
Trial	**Minimum**	**Average**	**Maximum**
Lowest	318	647	1,031
Median	341	841	1,466
Highest	544	1,168	2,444

Table 4. Population Size – No Action - Defer Gather and Removal (Alternative D)

***Estimated Population Sizes in 10 Years versus 11 Years**			
Trial	**Minimum**	**Average**	**Maximum**
Lowest	319	863	1,851
Median	347	1,189	2,810
Highest	448	1,755	4,399

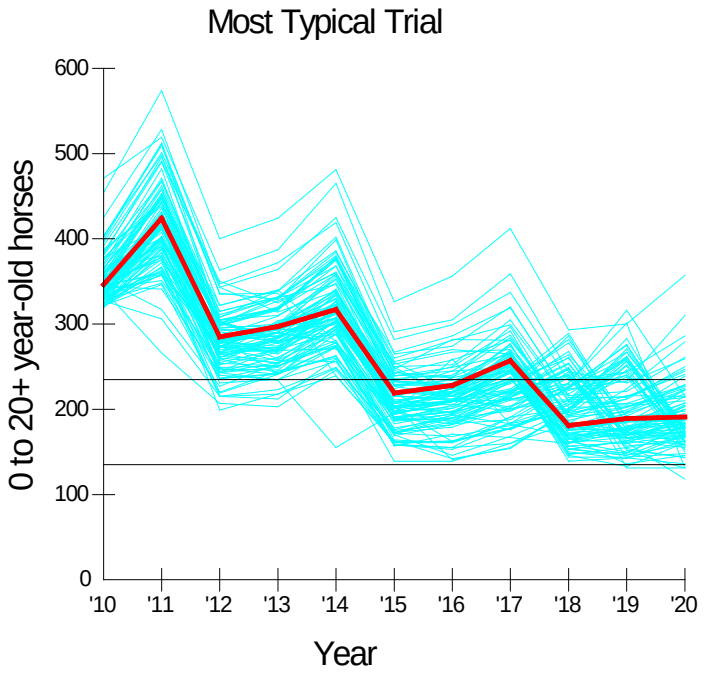
Time Series Graph of Most Typical Trial

Based on the results from the model, spaghetti graphs (see below) were generated for each simulation. These graphs show how population size changes over time. The Y-axis scale remains constant for each graph; however the X-axis was determined based on results and was unable to be changed. At first glance, there appears to be not much difference between the trials, but if the reader takes a closer look one finds the scales to be different.

Each line represents one of the 100 trials for the simulations completed for each alternative. The two horizontal lines located in the graphs represent the threshold for gather (upper range of AML) and the target population size (low range of AML). The Most Typical Trial graph includes a dark heavy line (red) which represents what the model has chosen as the trial with the most typical results. This trial closely matches the average of all 100 trials. The most typical trial is useful for making comparisons between alternatives, and for predicting what would be the probable results of the action.

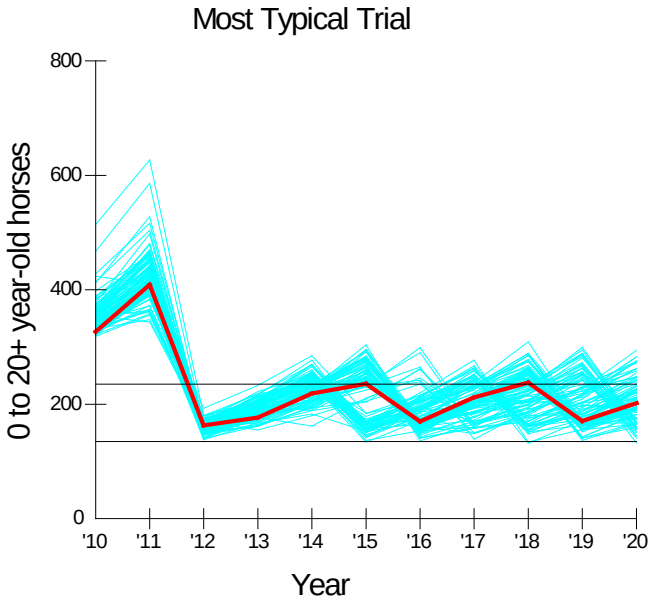
Population Size Graph of Most Typical Trial

Alternative A: Gather, Fertility Control + Sex Ratio Adjustment



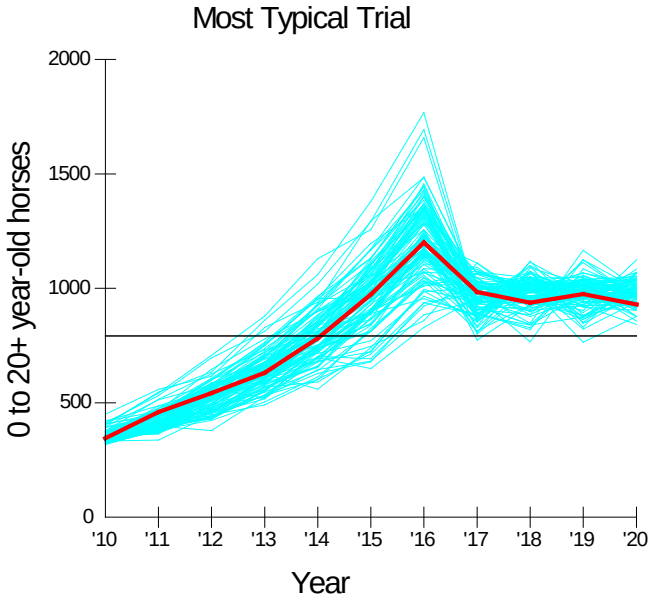
The results of the modeling for Alternative A indicate that following the 2011 gather with fertility control and the sex ratio adjustment that the average population between 2011 and 2020 on a minimum three year cycle would begin to be near AML in 2015 plus begin to be within AML under the same management strategy with another gather in 2014 into the high end of AML for 2015 and with another gather in 2017 to be within AML. This could potentially make for adjustments in future gather operations as well as the use or non-use of fertility and/or sex ratio adjustment(s). This model illustrates for BLM how to potentially get to within AML in seven years.

Alternative B: Gather Only



The results of the modeling under Alternative B indicate that when 135 wild horses remain in the HMA following the gather (gate cut type), that the average population would not reach the upper end of the AML until around the fourth year but under the modeling another gather would take place to bring the AML back down to the low end of AML and remain within AML. This alternative could potentially make for adjustments in future gathers to be further out from the current four year gather cycle. The model indicates that AML can be achieved without fertility control and the sex ratio adjustment, however reaching the low end of the AML is necessary during each gather without a selective removal of wild horses.

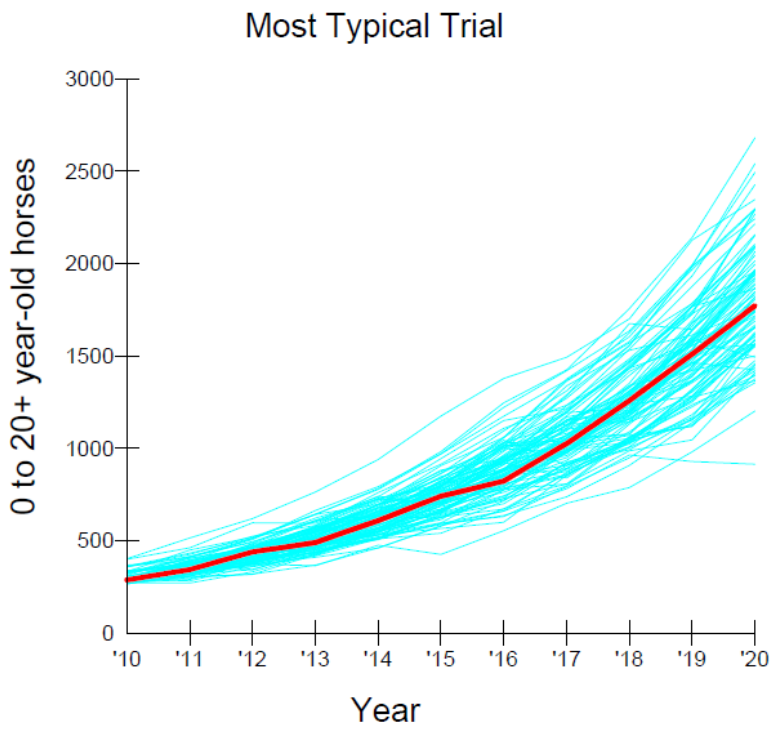
Alternative C: Gather in 2016



The results of the modeling under Alternative C indicate that when 792 wild horses remain in the HMA following the gather, that the average population would remain around 792 wild horses (assumption is that new AML unidentified at this time). This alternative could potentially require annual gathers of approximately 158 wild horses from the HMA.

No Action Alternative (No Wild Horse Gather)
Population modeling was completed for the No Action Alternative. The most typical trial was utilized to demonstrate the projected population over time if a gather does not take place. The graph of most typical trial for the gather area is displayed below as a comparison only. The graph clearly shows the continued increase in population size if a gather is not completed.

Population Size Graph of Most Typical Trial
No Action Alternative



Growth Rates
Through the model, average population growth rates were obtained for the Proposed Action and the Alternative to Reduce Herd to Lower AML Range but not to implement Fertility Control on Select Mares out of 100 trials. Growth rates are displayed for the lowest, median and highest trial.

HMA - Percent Average Growth Rates in 11 years

Trial	Alternative A: Gather + Fertility Control + Sex Ratio Adjustment	Alternative B: Gather Only in 2011	Alternative C: Gather in 2016	Alternative D: Defer Gather
Lowest	12.1	14.7	12.4	12.6

Median	17.9	19.7	19.3	19.6
Highest	22.1	24.7	23.2	22.9

Population modeling data reflects that the implementation of fertility control and sex ratio adjustment could result in reduced growth rate of the wild horse population within the HMA. Growth rate analyzed for the fertility control plus sex ratio adjustment alternative were lower than when fertility control and sex ratio adjustment was not implemented. The model also indicates that growth rates would not be so low as to cause risk to the population should fertility control be implemented.

Population Modeling Summary

To summarize the results obtained by simulating the range of alternatives for the HMA wild horse gather, the following questions can be addressed.

- *Do any of the Alternatives "crash" the population?*
  None of the alternatives indicate that a crash is likely to occur to the population. Minimum population levels and growth rates are all within reasonable levels, and adverse impacts to the population are not likely.

- *What effect does fertility control have on population growth rate?*
  As expected, the alternative implementing fertility control (Proposed Action) reflects the lowest overall growth rates. The growth rates for the HMA proposed for fertility control and sex ratio adjustment are lower than the non-fertility control growth rates.

- *What effect do the different alternatives have on the average population size?*
  Based on the average median population trial obtained through the population model for the no management action the herd size would be 1,189 (Alternative D), for the removal only alternative in 2016 and annual removals thereafter the herd size would be 841 (Alternative C), for the removal only alternative for 2011 the herd size would be 233 (Alternative B), and for the removal with fertility control and sex ratio adjustment alternative the herd size would be 205 (Alternative A).

The No Action Alternative is unacceptable, however, was analyzed for comparison with the other alternatives. Without a wild horse gather, populations could potentially double within every four year period.

APPENDIX D: 2010 Population Inventory

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
White River Field Office
220 East Market Street
Meeker, Colorado 81641

WILD HORSE INVENTORY
Piceance-East Douglas Herd Management Area, North Piceance and West Douglas Herd Areas, and Areas Outside the Herd Management Area or Herd Areas
February/March 2010

General Notes: Aircraft used was a Cessna 182 fixed wing. During all inventory flights flight following was conducted by the Craig dispatch center, by calling or by being called by the dispatch every 15 minutes to report operation status, and the latitude/longitude for our location at time of call in. If horses were seen while flying the grid pattern, the pilot would circle the group of horses, at least once so that we could get a gps point, take a picture, and confirm numbers counted. The pilot used gps in the plane to keep spacing between passes consistent at 800 feet. Different spacing is noted in the following text if different from the 800 feet used as the minimum distance. The pilot, Lannie Coulter, of Coulter Aviation, Meeker, Colorado is also highly experienced with locating of animals from the air due to his work with BLM and Colorado Division of Wildlife. All flights began at approximately 10:00 a.m. and were initiated out of the Meeker Airport. Snow cover was adequate unless otherwise noted. When we experienced flat light locating horses depended upon the angle spotting horses was a little harder.

During the first and third days of inventory flights, none of the horses ran as the aircraft flew over/circled them. On the second day, there were two groups that ran as the aircraft was circling; one group of ten head ran approximately 150 yards stopping before the aircraft left the area, and another group ran approximately 300 yards until the aircraft left the area. Other horses that ran during circling are noted in the text.

Inventory Flight of February 2, 2010

First and only day of inventory flight on the area known as Magnolia Bench which is outside the HMA.
Observers: Tyrell Turner (back seat behind pilot) and Melissa Kindall (front seat) with pilot, Lannie Coulter

Air temperature near 10 degrees above zero to start. We flew a NE/SW pattern from what is known as Timber Gulch (Dry Fork of Piceance) on the northern end and Collins Gulch (Rio Blanco County Road #3) on the southern end and from the Rio Blanco County Road #5 (Piceance Creek road) as the western and the Collins Gulch road along the ridge on what we considered the eastern end.

Located two bands of horses as follows (photos included):

1)	5 Head	N39.53.4/W108.15.5	3 Blacks, 1 Paint (tan/white), 1 Sorrel
2)	4 Head	N39.59.51/W108.10.97	2 Sorrel, 1 Gray, 1 Black

Based on previous notifications/sightings in the area by other BLM personnel, oil and gas operator employees, and private individuals (some photo documentation available) we expected to locate approximately 12 head of horses.

The first band of wild horses we located as they grazed along side of a roadway with active traffic use in the area. The area appeared to be portion of a rehabilitated route. The second band of horses we located were grazing on what was a wind swept knob located in the Greasewood Fire burn scar. These horses paid no attention to the airplane except to look up.

During the day we flew back to Meeker Airport at approximately 12:00 p.m. for a break and resumed the flight at approximately 12:25 p.m. with a finish time of near 3:25 p.m. 5.6 hours flight time logged, and approximately 55, 272 acres inventoried.

Inventory Flight of February 9, 2010
First Day of Inventory Flights – West Douglas Herd Area (WDHA)
Observers: Tyrell Turner (front seat), Fran Ackley, BLM, Colorado State Lead Wild Horse and Burro Specialist (back seat behind pilot), Lannie Coulter/pilot

To begin the day we flew from the Meeker Airport west to the Little Horse Draw area. After reaching this area, we flew west up the draw to the point where we could make a straight line south, keeping Texas Mountain and Oil Springs Mountain directly west of first pass of this grid. We chose to keep Texas and Oil Springs Mountains to the west so that we could make long continuous passes at a consistent elevation. The starting pass of the grid was flown south from Little Horse Draw to approximately the head of Trail Canyon, before turning back north, and paralleling the first pass. This pattern, working west to east until reaching State Highway 139. After finishing this grid area (approximately 22,000 acres) we flew back to the Meeker Airport to drop off Fran Ackley. The Pilot and Tyrell Turner then flew back to the inventory area. We flew straight to the Little Horse draw area to begin setting up the next grid pattern. Started at the Head of Little Horse Draw, using the long ridge running North/South between Texas Creek and Little Horse Draw as the western boundary for the grid pattern, flew south along high ridge from Little Horse Draw to Texas Mountain were we turned north. We flew paralleling the previous pass working west to east until reaching the first pass of the day which ran directly east of Texas Mountain. After finishing this area, we moved to the area between Texas and Oil Springs Mountains. To start the grid we flew south along the ridge between Texas and Oil Springs

Mountains, worked east to west until we could make one long pass between Oil Springs and Little Horse Draw, with Texas Mountain to the east. Flight concluded for the day by leaving the ridge between Little Horse Draw and Texas Creek as a topographical boundary to start from the following day.

Located 8 bands of horses as follows (photos included):

1) 3 Head	N39.43.59/W108.51.2	All bays
2) 1 Head	N39.49.45/W108.48.04	Sorrel/Flax Mane and Tail
3) 5 Head	N39.48.44/W108.48.58	Bays and Browns
4) 1 Head	N39.48.83/W108.48.82	Bay
5) 3 Head	N39.47.53/W108.47.94	2 Bay, 1 Black
6) 5 Head	N39.46.29/W108.48.30	
7) 4 Head	N39.43.76/W108.48.96	

3.0 hours flight time logged, approximately 22,000 acres inventoried.

Pilot flew back to the Meeker Airport to let Fran Ackley out due to illness at approximately 12:45 p.m. At approximately 1:30 Tyrell Turner and pilot, Lannie Coulter, left the Meeker Airport enroute to continue the inventory work from where they left off earlier in the day. Locating only one more band of wild horses as listed below:

8) 5 head N39.47.66/W108.46.50 with 1 yearling

Total 4.5 hours flight time logged for the day, and approximately 31,000 acres inventoried for the day.

Inventory Flight of February 10, 2010
Second Day of Inventory Flights – West Douglas Herd Area (WDHA)
Observers: Tyrell Turner (front seat), Fran Ackley (back seat behind pilot), Lannie Coulter/pilot

Initially flight cancelled by pilot due to weather, however, upon further checking the flight was a go.
We flew the western section of the Texas Mountain and the Rabbit Mountain as well as the northwest portion of Bull Draw. We flew a NE/SW pattern in the western section of Texas Mountain and flew a NW/SE pattern on the rest of the flight. The day was mostly sunny and visibility good.

We again flew to the Little Horse Draw area to begin grid pattern for the day. Started flying the pattern from where we had left off the previous day, going south along the ridgeline, using a high point just north of BLM Road #1064 as the north starting point and flying southwest to East Evacuation Creek. Flying this far south put us outside of the WDHA, however, BLM personnel had previously seen and also received reports of horses in this area. Continuing the pattern, working east to west using East/Main Evacuation Creeks as the southern turn around and BLM Road #1064/North Fork of Texas Creek/Texas Creek as the northern turn around. Continued this pattern to the point where Whiskey Creek ties into Evacuation Creek approximately parallel to

County Road #109 between Missouri and Texas Creeks. We felt that this pattern covered far enough south and west to give us an accurate count of horses outside the WDHA. Starting a new pattern, by flying north from Texas Creek just west of Park Mountain to the southern face of Rabbit Mountain. Continued this pattern working west to east until reaching the eastern face of Rabbit Mountain, we then started flying further west to the first large rim which runs northeast from the Gilsonite Hills. This also changed our flight path from generally north/south to NW/SE, using the rim off of Gilsonite Hills as the northwest turnaround, and the long ridge between Little Horse Draw and Texas Creek as the southeast turnaround, to the point where this ridge intersects the head of West Fourmile Draw, which then became the southeast turnaround. Continued this pattern working south to north until reaching cottonwood draw, where we started using County Road #23 as the northwest turnaround and West Fourmile Draw as the southeast turnaround. Flew this pattern until the intersection of County Road #23 and County Road #100, this was the conclusion of inventory flight for the day.

General observations: While flying the Rabbit Mountain zone, we expected to see horses within the Klinger fire area, a fire that burned in 2000 with successful revegetation, however we did not count any horses in this area. While flying over the Park Canyon and Klinger fire area, we expanded the spacing between passes to 1,500 feet as the canopy cover was thin, and much of Park Canyon is private land.

Due to the pilots prior commitments, and the weather forecast we thought we would not be able to fly again until Wednesday 2/17. Remaining 24,000 acres needed to be finished in the WDHA inventory or as follows: From the mouth of West Fourmile Draw south to the head of Little Horse Draw east to State Highway 139 north to the mouth of West Fourmile Draw. Since it would be a week before we could fly again we left this area because we felt that West Fourmile, Little Horse, and State Highway 139 were adequate natural and manmade barriers to limit wild horse movement, and prevent under or overcounting.

Located 14 bands of horses as follows (photos included):

1)	3 Head	N39.46.34/W108.54.25	2 bays, 1 black
2)	3 Head	N39.47.77/W108.53.98	Bays
3)	3 Head	N39.47.19/W108.54.36	
4)	3 Head	N39.42.59/W108.59.62	
5)	4 Head	N39.48.59/W108.55.29	
6)	1 Head	N39.47.16/W108.56.14	Bay
7)	5 Head	N39.47.66/W108.56.36	
8)	2 Head	N39.45.14/W108.59.17	
9)	2 Head	N39.45.89/W108.59.59	
10)	3 Head	N39.49.90/W108.57.28	
11)	10 Head	N39.50.18/W108.54.90	Yealings?
12)	4 Head	N39.51.20/W108.54.20	1 Yearling
13)	1 Head	N39.54.70/W108.48.37	
14)	2 Head	N39.57.91/W108.47.95	

5.7 hours flight time logged, approximately 93,000 acres inventoried.

Inventory Flight of February 23, 2010
Third and Last Day of Inventory Flights – West Douglas Herd Area (WDHA)
Observers: Tyrell Turner (back seat behind pilot), Melissa Kindall (front seat), Lannie Coulter/pilot

We flew direct to that portion of Bull Draw in order to finish the inventory. The area had received new snow over the previous weekend. We flew a N/S pattern between Bull Draw and Little Horse Draw. The day was sunny and visibility excellent. Morning lows for the area were noted at nearly -15 below zero.

Located 2 bands of horses as follows (photos included):

1)	4 Head	N39.50.12/W108.49.76	Bays, 1 Yearling
2)	9 Head	N39.49.22/W108.47.88	Dark Bays, 2 Yearlings

1.5 hours flight time logged on this portion of inventory flight, approximately 16,500 acres inventoried.

Inventory Flight Continues as follows:
First Day of Inventory Flights – Piceance-East Douglas Herd Management Area (HMA)
Observers: Melissa Kindall (front seat) and Tyrell Turner (back seat, behind pilot), Lannie Coulter/pilot

After we finished with the WDHA inventory we flew direct to the area known as 84 Mesa which is in the Piceance-East Douglas Herd Management Area. We started in this area in order to give a requested participant, Amy Hadden Marsh, the opportunity to visualize the grid pattern and inventory process from the ground along with obtaining information and sound bites for her media related story/work. Ms. Marsh was accompanied by James Roberts, Assistant Field Officer Manager, White River Field Office, via a BLM vehicle. The initial location of their viewing took place on County Road #24X and then they moved to a higher vantage point on County Road #122 to continue to view the inventory. We flew a NW/SE pattern between Duck Creek, Yellow Creek and County Road #24X.

Located 9 bands of horses as follows (photos included)

1)	7 Head	N39.58.552/W108.27.94	Dark Bays, 1 yearling
2)	5 Head	N39.57.60/W108.25.80	Bay, 1 yearling
3)	5 Head	N39.56.25/W108.25.68	Bay, 1 yearling
4)	5 Head	N39.58.25/W108.25.12	Bay, 1 yearling
5)	13 Head	N39.57.97/W108.24.54	Sorrels (2 Flax) and Bays, 3 to 4 yearlings
6)	7 Head	N39.57.24/W108.24.28	Bays, Palomino Coloring, 1 yearling

7)	3 Head	N39.57.40/W108.23.57	Sorrels and Bays
8)	2 Head	N39.57.76/W108.23.80	1 Bay, 1 Sorrel
9)	3 Head	N39.57.60/W108.25.80	Bay/Dark Bays (young stud band)

Flight Continues as follows: Left the area known as 84 Mesa and flew direct to County Road #122 drops off the top down to County Road #24X, then we flew generally E/W using County Road #24X, Middle Barcus Creek to Duck Creek as the fly zone. As the grid pattern continued north we used Main Barcus Creek and Yellow Creek as the fly zone. The day ended in the area locally known as the Violet Place which is in the drainage bottom of Yellow Creek.

Located 7 bands of horses as follows (photos included):

1)	7 Head	N40.01.15/W108.28.15	1 Gray, Bays/Sorrels, 1 laying down
2)	1 Head	N40.00.31/W108.26.33	In small burned out area
3)	8 Head	N40.02.56/W108.28.07	Bays, 2 yearlings
4)	2 Head	N40.02.72/W108.26.98	Mare with possible yearling, nursing
5)	1 Head	N40.01.48/W108.25.54	Bay
6)	3 Head	N40.03.15/W108.08.26	Bays on the County Road #88, young stud band
7)	3 Head	N40.02.81/W108.25.26	2 Bays, 1 Sorrel

4.3 hours flight time logged in the above listed area with a total of 5.8 hours flight time logged this day, approximately 25,000 acres inventoried in the HMA; but approximately 41,500 acres inventoried for the day.

Inventory Flight of February 24, 2010
Second Day of Inventory Flights –HMA
Observers: Melissa Kindall (front seat) and Tyrell Turner (back seat), Lannie Coulter/pilot

We flew direct to the Violet Place to finish the Pinto Mesa section of the inventory. The area had received new snow over the previous weekend. We flew an E/W pattern between Yellow Creek and Barcus Creek to finish the polygon flying the grid pattern. The day was partly sunny and visibility good. Today is warmer than yesterday but morning lows were approximately zero and warmed to 32 degrees for the day.

Located 4 bands of horses as follows (photos included):

1)	3 Head	N40.02.15/W108.22.04	
2)	1 Head	N40.02.45/W108.23.32	Horse running
3)	3 Head	N40.01.59/W108.21.27	1 Gray, 2 Bays - Horses running, Possible young stud band
4)	6 Head	N40.05.54/W108.24.15	2 yearlings, Bays

Flight Continues as follows: Left the area known Pinto Mesa and began to fly the back side of Rocky Ridge or the south facing portion. We used Yellow Creek as the west boundary, RBC

Road #5 as the eastern boundary, RBC Road #88 as the southern boundary and the Rocky Ridge ridgeline as the northern boundary for this portion of the grid pattern.

Located 4 bands of horses as follows (photos included):

1)	4 Head	N40.04.53/W108.19.04	Near a vegetation monitoring plot, All dark
2)	3 Head	N40.06.41/W108.19.61	1 Sorrel, 2 Bay (young stud band)
3)	1 Head	N40.05.78/W108.19.23	Bay
4)	5 Head	N40.03.51/W108.16.74	All Dark Bays, possible 1 yearling

Flight Continues as follows: Left the back side of Rocky Ridge to begin to inventory the front side of Rocky Ridge or the north facing portion. We used Yellow Creek as the west boundary, RBC Road #5 as the eastern boundary, the Rocky Ridge ridgeline as the southern boundary and the State Highway 64 as the northern boundary for this portion of the grid pattern.

Located 1 band of horses as follows (photos included)

1)	2 Head	N40.09.56/W108.21.64	Bays

4.0 hours flight time logged, approximately 36,000 acres inventoried.

Based on previous notifications and sightings by other BLM personnel and private individuals we expected to locate a larger group of 7 head that are common to the front side of Rocky Ridge but we were not able to locate them.

Inventory Flight of March 1, 2010

Third Day of Inventory Flights –HMA
Observers: Melissa Kindall (front seat) and Tyrell Turner (back seat), Lannie Coulter/Pilot

During the enroute flight we located a band of 4 head of horses that we had not seen the previous flight in this area on the front side or north facing slope of Rocky Ridge, see February 23, 2010 for two (2) head counted.

Located 1 band of horses as follows (photos included):

4 Head	N40.06.05/W108.18.75	1 Sorrel, 3 Bays

We flew direct to the mouth of Yellow Creek. We used Main Barcus Creek as the eastern line, Monument Gulch as the western line, State Highway 64 as the northern boundary, and the HMA fence line along the ridge top as the southern boundary. The snow was spottie on south facing slope. The day was sunny and visibility excellent.

Located 22 bands of horses as follows (photos included):

1)	2 Head	N40.08.98/W108.25.24	Bays
2)	2 Head	N40.07.32/W108.24.53	1 Head Laying Down
3)	4 Head	N40.07.92/W108.28.12	2 Gray, 1 Bay, 1 Sorrel
4)	2 Head	N40.06.42/W108.24.55	1 Sorrel, 1 Bay
5)	3 Head	N40.06.16/W108.24.87	Bays
6)	8 Head	N40.06.13/W108.24.96	1 Yearling
7)	3 Head (running)	N40.06.35/W108.23.37	2 Bay, 1 Yearling Sorrel
8)	4 Head	N40.06.34/W108.25.46	2 Black, 2 Dark Bay
9)	11 Head Sorrel, 2	N40.05.59/W108.25.53	1 Lt Gray, Bays, Blacks, 1 Yearlings
10)	7 Head Yearling	N40.05.11/W108.25.94	Bays, Sorrels, possible 1
11)	6 Head	N40.06.09/W108.28.99	On the Road, Dark Bays
12)	3 Head	N40.05.54/W108.27.32	Dark Bays
13)	4 Head	N40.05.55/W108.28.63	In the bottom, Dark Bays
14)	4 Head	N40.04.18/W108.27.57	1 Laying Down – 1 Rolling
15)	1 Head	N40.04.21/W108.25.42	Bay
16)	3 Head	N40.04.53/W108.29.87	All Dark, possible all black
17)	10 Head possible 3	N40.03.08/W108.26.53	1 Gray, Bays, Sorrels, Yearlings
18)	8 Head	N40.03.08/W108.26.53	Bays, Sorrels
19)	5 Head	N40.03.19/W108.28.39	Darks, 1 Yearling
20)	5 Head	N40.02.61/W108.26.93	Dark
21)	11 Head	N40.02.69/W108.27.86	1 Gray, Bays, Blacks
22)	6 Head down) – one	N40.01.62/W108.28.15	2 Gray, 4 Bay (3 laying got up due to fly over.

5.6 hours flight time logged, approximately 51,000 acres inventoried.

Inventory Flight of March 2, 2010

Fourth Day of Inventory Flights –HMA, East Douglas Portion
Observers: Melissa Kindall (front seat) and Tyrell Turner (back seat), Lannie Coulter/Pilot

Enroute to the East Douglas area of the HMA Craig dispatch called requesting that we divert to a location on Piceance Creek to check out a smoke report (#IA021). We notified dispatch that we'd made a couple of passes in the area but did not see anything so we resumed our flight to the East Douglas area.

As we passed over an area locally known as the Yellow Creek Jeep Trail (County Road #83) 4

head of horses were located at the following location which is outside the HMA:

4 Head N40.00.66/W108.16.19 1 Dk and 1 Lt Bucksin, 1 Bay Yrlg, 1 Gray

Flight Continues as follows: Started the flight just outside the HMA in Gillam Draw which is a portion of the North Piceance Herd Area. The snow cover was spottie on some south facing slopes but as we traveled south and obtained higher elevations the snow cover was adequate. We flew a generally N/S pattern using Big Ridge and Cathedral Bluffs as the eastern line, State Highway 139 as the western line, Cathedral Creek as the southern boundary, and State Highway 64 as the northern line. The day was partly sunny and visibility was good.

Located 9 bands of horses as follows (photos included):

1) 7 Head N39.47.49/W108.35.19 4 Sorrels , 3 Bays
2) 4 Head N39.46.19/W108.32.76 3 Sorrels (with socks), 1 Bay (young bunch)
3) 7 Head N39.47.25/W108.34.90 Bays, Sorrels (near Rocky Point Draw)
4) 6 Head N39.46.33/W108.34.09 All Sorrels, 1 Yearling
5) 4 Head N39.46.13/W018.34.04 All Sorrels
6) 5 Head N39.52.46/W108.40.69 2 Blacks, 2 Bays, 1 Yearling Bay
7) 1 Head N39.53.74/W10842.84 1 Bay (not far from intersection of Main and East Douglas)
8) 7 Head N39.52.59/W108.42.73 Dark Bays possible blacks
9) 1 Head N39.51.53/W108.42.61 1 Bay, Star and RR w/ White

6.0 hours flight time logged, approximately 69,000 acres inventoried.
Pilot stated at end of the flight that he would be unavailable until possibly Monday, March 8, 2010.

Monday, March 8, 2010

Overcast and trying to snow.

Tuesday, March 9, 2010

Called by pilot stating that he checked the weather and that the area we were planning on going to was going to be windy and that a helicopter catching mule deer was also working in the area so there were additional safety concerns for this day regarding our inventory work in a nearby area. The pilot thought that the next opportunity to fly the Boxelder/Square S, Pasture C area might be Thursday, March 11, 2010. At approximately 1:00 p.m. the town of Meeker was

beginning to experience light snow fall.

Wednesday, March 10, 2010

Overcast and trying to snow.

Thursday, March 11, 2010 and Friday, March 12, 2010

Overcast and trying to snow, expected to clear in afternoon.
Called at approximately 2:30 p.m. by pilot stating he was unavailable for Friday, 12 March 2010 so he rescheduled us to Monday, 15 March 2010. I asked the pilot if we could be the booking for three days in a row based on the weather information off of the internet which stated that 15 March (Monday) through 17 March (Wednesday) to be partly sunny to sunny conditions and he stated that's what he'd plan.

Monday, March 15, 2010

Pilot called to say that he had a make-up flight with the Colorado Division of Wildlife to fly with with them for a moose inventory.

Inventory Flight of March 16, 2010
Fifth and Final Day of Inventory Flights –Boxelder/Square S, Pasture C area in the HMA and the area known as "Doughnut Hole" or outside the HMA
Observers: Melissa Kindall (front seat) and Tyrell Turner (back seat), Lannie Coulter/Pilot

Started the flight just outside the HMA by using a pipeline corridor east of Ryan Gulch east line, County Road #24X as the north line, County Road #122 as the west line, and the Cathedral Bluffs as the south end of the pattern. The initial eastern line was used due to the fact the Melissa Kindall had seen three head (stud, mare, and foal) outside of the HMA at the cattleguard crossing just off of the intersection where County Road #70 turns east from County Road #91 in October 2009. The day was partly sunny and generally the area covered with high clouds so visibility was good. Snow conditions on most south facing slopes contained no snow with patchy north facing slopes. As we obtained higher elevations the snow cover changed to good.

Located 18 bands of horses as follows (photos included):

1)	5 Head	N39.57.46/W108.27.54	3 Sorrels , 1 Gray, 1 Black (1 laying down) Bays
2)	3 Head bunch)	N39.57.24/W108.28.22	1 Bay, 1 Black, 1 Gray (young
3)	3 Head	N39.52.58/W108.27.51	Darks
4)	7 Head	N39.54.33/W108.27.88	Bays and Dark

5)	4 Head	N39.54.92/W108.29.07	1 Gray, 3 Bays
6)	6 Head	N40.01.26/W108.31.93	4 Bays, 2 Sorrels (Mare Canyon)
7)	2 Head	N40.01.09/W108.31.75	Bay/Dark (Mare Canyon)
8)	3 Head	N39.53.97/W108.29.59	Dark Bays
9)	4 Head	N39.52.88/W108.30.34	Darks (3 laying under the trees)
10)	4 Head	N39.53.76/W108.30.90	1 Sorrel, 3 Darks possible Black
11)	2 Head	N39.52.53/W108.30.50	1 Sorrel, 1 Dark Gray (no one else saw but Melissa)
12)	3 Head	N39.52.59/W108.31.76	All Dark
13)	9 Head	N39.51.81/W108.32.57	1 Gray, rest Dark (in the open, no yearlings)
14)	4 Head	N39.56.89/W108.34.30	Darks
15)	5 Head	N39.56.62/W108.34.62	1 Sorrel 1 Gray, 3 Darks
16)	5 Head	N39.51.30/W108.31.86	1 Gray, 4 Dark
17)	2 Head	N39.55.79/W108.35.03	Darks
18)	5 Head	N39.51.89/X108.33.57	2 Gray, 3 Darks

6.0 hours flight time logged, approximately 78,000 acres of inventory.

Inventory Flight of March 17, 2010

First and Only Day of Inventory Flights – North Piceance Herd Area
Observers: Melissa Kindall (front seat) and Tyrell Turner (back seat), Lannie Coulter/Pilot

It was decided that a complete inventory was not necessary in the NPHA so the grid pattern became 1,00 to 1,250 feet intervals in order to determine if horses are within the NPHA. The pattern started at Monument Gulch as the eastern line, State Highway 64 as the northern line, Gilliam Draw/Big Ridge as the western line, and Calamity Ridge as the southern line. The day was sunny with some high clouds and visibility good.

Located 8 bands of horses as follows (photos included):

1)	3 Head	N40.08.89/W108.36.66	All Darks, 1 possible dark gray
2)	5 Head	N40.08.56/W108.34.91	1 Black Foal, 1 Palomino or possible Cremello Stud, 3 Blacks
3)	1 Head	N40.08.36/W108.36.93	Black
4)	3 Head Cremello	N40.07.70/W108.35.33	2 Dark, 1 Palomino or possible (young stud bunch)
5)	10 Head	N40.05.97/W108.41.74	Dark, 1 Foal
6)	5 Head seen	N40.04.48/W108.37.84	All Darks (Range Specialists has before)
7)	4 Head	N40.03.86/X108.38.07	3 Bay, 1 Gray (in the burn)
8)	3 Head	N40.02.77/W108.36.80	1 Gray, 2 Dark (1 yearling)

3.1 hours flight time logged, approximately 79,500 acres of inventory.

In Summary, 46.3 hours of flight time was logged. Approximately 534,272 acres inventoried.

Other hours charged to this inventory included: 28.5 hours dispatch time (Stacy Gray, Supervisor) as well as 8 hours Aviation Management through Craig Interagency Dispatch Center and Dave Toelle.

INVENTORY COUNT

201 head Outside the HMA as follows:

29 head	Outside HMA: South of East Douglas Portion
3 head	Outside HMA: East of Ryan Gulch
4 head	Outside HMA: Yellow Creek Jeep Trail/County Road #5 (Yellow Creek Burn)
3 head	Outside HMA: 300 yards into Yellow Creek Drainage Bottom
3 head	Outside HMA: 250 yards north of Cross Roads Intersection at County Roads #88, #20, #83
15 head	Outside HMA in the Doughnut Hole (3 bands: 7 head; 6 head; 2 head)
9 head	Outside HMA on Magnolia Bench
49 head	in North Piceance Herd Area (one of which is this year's foal)
86 head	in West Douglas Herd Area – of which 13 head were beyond the WDHA Boundary
265 head	Inside the HMA Boundary

Notation: None of the horses located would have been listed below a 2 or very thin condition rating (Henneke System) and in general the average condition rating would have been a 5 or moderate over all for those horses located during the inventory.

APPENDIX E: Springs Inventoried within the HMA

SECTION NUMBER	TOWNSHIP	RANGE	MAP CODE	WATER RIGHT	SC	PH	Q IN GPM	DATE MEASURED
6	2N	99W	119-01	85CW341	5851	8	0	11-Jul-83
4	2N	99W	119-02		2589	7	1.15	31-Aug-83
1	2N	100W	119-03	85CW460	5000	8		05-Jul-83
1	2N	100W	119-04		5589	9	0.02	30-Jun-83
12	2N	100W	119-05		5249	9	0.05	30-Jun-83
10	2N	100W	119-06		9563	8	1.5	30-Jun-83
7	2N	99W	119-07	85CW341	3469	9	0.13	05-Jul-83
					3648	7	0.04	12-Jul-83
9	2N	99W	119-09	85CW412	1659	8	0.08	31-Aug-83
17	2N	99W	119-10		1411	9	0.46	12-Sep-83
19	2N	99W	119-12	85CW458	4600	8	0.88	13-Jul-83
9	2N	100W	119-13	85CW461	2402	8	0.61	30-Jun-83
9	2N	100W	119-15	85CW461	2201	8	0.16	30-Jun-83
9	2N	100W	119-16	85CW461	6617	7		30-Jun-83
19	2N	99W	119-19	85CW458	2691	8	8.11	13-Jul-83
19	2N	99W	119-20	85CW458	8347	9	0.75	13-Jul-83
18	2N	99W	119-21	85CW458	5563	8	0.09	13-Jul-83
18	2N	99W	119-22	85CW458	6192	7	0.02	13-Jul-83
18	2N	99W	119-23					13-Sep-83
7	2N	99W	119-24	85CW341	5170	8	0.93	12-Jul-83
6	2N	99W	119-26		6742	9	0.08	11-Jul-83
6	2N	99W	119-27		6321	9		11-Jul-83
1	2N	100W	119-28	85CW460	4834	9	0.02	05-Jul-83
7	2N	99W	119-30	85CW411	3907	8	1	12-Jul-83
7	2N	99W	119-31	85CW411	2132	8	1.56	12-Jul-83
6	2N	99W	119-32	85CW411	8160	6	0.13	12-Jul-83
6	2N	99W	119-35					11-Jul-83
6	2N	99W	119-36		5710	9		11-Jul-83
5	2N	99W	119-40	85CW410	3380	8	17.9	15-Sep-83
15	2N	100W	119-44		3945	7		30-Jun-83
6	2N	99W	119-45	85CW341	6508	10	0.01	11-Jul-83
6	2N	99W	119-46		6017	7		12-Jul-83
7	2N	99W	119-48	85CW411	2215	8	0.07	12-Jul-83
18	2N	99W	119-50	85CW458	5000	8		13-Jul-83
19	2N	99W	119-51	85CW458	3816	8	3.16	13-Jul-83
19	2N	99W	119-52	85CW458	6440	9	0.12	13-Jul-83
19	2N	99W	119-53	85CW458	13000	9		13-Jul-83
19	2N	99W	119-54	85CW458	9820	8	0.03	13-Jul-83
5	2N	99W	119-55	85CW368	4450	8	0.41	15-Sep-83
26	2N	98W	146-02		4198	8		16-Sep-83
31	2N	99W	148-06	85CW459	1415	8	1.39	31-Aug-83
24	2N	100W	148-34	85CW462	8034	9	4.17	26-Aug-83

SECTION NUMBER	TOWNSHIP	RANGE	MAP CODE	WATER RIGHT	SC	PH	Q IN GPM	DATE MEASURED
30	2N	99W	148-44	85CW459	2057	8	0.95	31-Aug-83
28	1N	101W	149-02		11419	8	0.2	21-Jun-84
33	1N	100W	149-03	AR72,81CW4	2549	8	1	14-Aug-84
4	1N	101W	149-04	85CW455	1957	9	0.54	26-May-83
35	2N	101W	149-12	85CW374	6251	8	7.5	14-Aug-84
18	1S	100W	156-03	85CW376	6283	9	12	14-Aug-84
32	1S	100W	156-05	85CW377	8610	8	20	13-Jun-84
32	1S	100W	156-06	85CW443	3269	8	0.7	09-Jul-84
32	1S	100W	156-07	85CW443	3175	9	4.6	09-Jul-84
9	2S	100W	156-09		3078	9	100	26-Jun-84
18	1S	100W	156-14	85CW376	3096	9	0.5	14-Aug-84
18	1S	100W	156-15	85CW376	4645	9	5	14-Aug-84
21	1S	100W	156-16		2049	7	2.5	14-Aug-84
32	1S	100W	156-19	85CW377	9479	8	0.8	13-Jun-84
32	1S	100W	156-20		5096	8	0.2	13-Jun-84
32	1S	100W	156-21	85CW377	11076	8	1.9	13-Jun-84
5	1S	100W	156-24	85CW375	8132	7	3.8	14-Aug-84
6	2S	99W	157-01	82CW317	2780	7	5.8	27-Jul-83
					1694	9	23.6	31-Aug-82
7	2S	99W	157-02		1619	8	5.3	31-Aug-82
16	1S	100W	157-10		2078	8	21.9	28-Jul-83
22	1S	100W	157-11	85CW446	2328	8	7.5	02-Aug-83
23	1S	100W	157-14		2409	8	5.6	02-Aug-83
25	1S	100W	157-15		2869	8		26-Jul-83
25	1S	100W	157-16		2505	7		27-Jul-83
25	1S	100W	157-17		2468	7		27-Jul-83
2	2S	100W	157-19	85CW363	1870	7		20-Jul-83
25	1S	100W	157-23		2365	8		02-Aug-83
25	1S	100W	157-25		1932	8	7.5	26-Jul-83
26	1S	100W	157-26		2783	8		02-Aug-83
23	1S	100W	157-28		2101	8	1.5	02-Aug-83
9	2S	99W	157-36		1585	8		26-Jul-83
2	2S	100W	157-44	85CW363	2203	7		20-Jul-83
12	3S	100W	174-01		1277	7	4.22	17-Aug-82
22	2S	100W	174-02				45.2	19-Jul-83
					2102	8	2.73	27-Jul-83
24	2S	100W	174-03		2275	8		19-Jul-83
					1223	7	0.26	17-Aug-82
1	3S	100W	174-09	82CW317	826	8	22.5	21-Jul-83
					735	9	3.69	24-Aug-82
22	3S	100W	174-11	82CW317	609	8	3.35	25-Aug-82
14	2S	100W	174-12	85CW383	1641	7		18-Jul-83
36	2S	100W	174-13		1287	8	54.6	20-Jul-83
2	3S	100W	174-29	85CW388	2795	9	0.3	13-Aug-84

SECTION NUMBER	TOWNSHIP	RANGE	MAP CODE	WATER RIGHT	SC	PH	Q IN GPM	DATE MEASURED
11	3S	100W	174-30	85CW388	2360	8	7.1	10-Jul-84
2	3S	100W	174-31	85CW351	1718	8	3.53	21-Jul-83
14	2S	100W	174-34	85CW364	2484	8	0.5	18-Jul-83
14	2S	100W	174-35	85CW364	2021	7		18-Jul-83
1	3S	100W	174-46	85CW351	1965	8	6.67	25-Jul-83
36	2S	100W	174-48		1867	8	12.5	26-Jul-83
31	2S	99W	174-49	85CW382	3916	8	4.5	26-Jul-83
26	2S	100W	174-53	85CW367	775	8	0.28	20-Jul-83
14	2S	100W	174-66		3008	7	3.3	18-Jul-83
2	3S	100W	174-67	85CW351	1041	8	4.34	21-Jul-83
2	3S	100W	174-68	85CW351	1278	8	1.3	21-Jul-83
1	3S	100W	174-69	85CW351	908	8	8.57	21-Jul-83
1	3S	100W	174-70	85CW351	995	8	0.25	21-Jul-83
1	3S	100W	174-71		2300	8	0.74	25-Jul-83
1	3S	100W	174-72	85CW394	2288	8	0.63	25-Jul-83
26	2S	100W	174-73	85CW366	1729	7	7.3	26-Jul-83

Map Code = Is a BLM unique designation for the spring that corresponds to the map location
Water Right = This is the case number in which the water right was issued.
SC = This is specific conductance and is measured in µS/cm which is mico-seimens per centimeter.
PH = This is a measure of acidity or alkalinity of a solution and is in what is called standard units
Q in GPM = This is the flow or discharge of the spring as measured in gallons per minute

APPENDIX F: Guidance regarding distance of helicopter operations from persons and property during Wild Horse and Burro gather Operations.

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Fire and Aviation
3833 South Development Avenue
Boise, Idaho 83705-5354
http://www.nifc.gov

TAKE PRIDE IN AMERICA

JUN – 2 2011

In Reply Refer to:
9400 (FA500) P

Memorandum

To: Assistant Director, Renewable Resources and Planning
Attention: Ed Roberson

From: Timothy M. Murphy
Acting Assistant Director (NIFC), Fire and Aviation

Subject: Guidance regarding distance of helicopter operations from persons and property during Wild Horse and Burro gather operations.

When helicopters are utilized in conjunction with an End-Product contract, currently, two end product contracts are in use for Wild Horse and Burro (WH&B) operations, they are operated as "civil" aircraft and the Bureau of Land Management (BLM) will not dispatch, direct, nor exercise any operational control of the helicopter (reference Operational Procedures Memorandum 06-35). For a civil aircraft operation, the aircraft operator is required to be in compliance with 14 CFR Part 91 of the Federal Aviation Regulations (FAR's) and any regulatory issues would be between the Federal Aviation Administration (FAA) and the aircraft operator.

However, there are other aircraft acquisition instruments available to the Bureau for conducting aerial herding or capture operations. Both the following aircraft acquisition methods require Bureau operational control and as such all Bureau aviation policy and procedures would apply. Departmental Manual 351 DM 1.1 as well as BLM 9400.13 requires that aircraft operations comply with all FAR's except as noted in the Departmental Manual or exempted by the Associate Director, Aviation Management Directorate. There is no specific Departmental or Bureau aviation policy that addresses the distance a helicopter must remain from personnel.

- Exclusive-Use aircraft contracts. This type of procurement involves formal contracts which secure aircraft for a specific activity, a specified length of time and based in a specific location. The measure of payment for exclusive-use aircraft services is typically based on a Daily Availability and hourly Flight Rate. During the exclusive-use period,

the contractor must respond and be available exclusively to the government. The contractor is guaranteed daily availability payments during the exclusive-use period. Bureaus may request exclusive-use contracts when they have a large project or recurring need and expenditures will exceed $25,000; therefore, Bureau funding must be assured and stable. Aircraft utilized under WH&B exclusive-use contracts may be used for all WH&B aviation operations.

- DOI On-Call WH&B helicopter contract. Currently there is a WH&B On-Call helicopter contract available to DOI. This contract has five vendors and is in the final year of a four year contract. The measure of payment for aircraft services under the WH&B On-Call Helicopter contract is an hourly Flight Rate. There is no exclusive use period with On-Call contracts. Services are ordered as needed during the contract period but there is no obligation for the government to place orders, nor is the contractor obligated to accept an order. Once an order is accepted, the contractor must perform and a minimum guarantee applies for the period of use. On-Call contracts are utilized when dates of use, amount of use and funding are uncertain to the Bureau.

    - The current On-Call WH&B contract states in B 20, Flight Operations: "*Regardless of any status as a public aircraft operation, the Contractor must operate in accordance with their approved FAA Operations Specifications and all portions of 14 CFR Part 91 (including those portions applicable to civil aircraft) and each certification required under Section B2 unless otherwise authorized by the CO.*"

The Part 91 FAR that directly addresses the distance an aircraft must maintain from persons and property is 91.119:

91.119 Minimum safe altitudes: General.

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

(d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface—

(1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and

(2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.

[Docket No. 18334, 54 FR 34294, Aug. 18, 1989, as amended by Amdt. 91–311, 75 FR 5223, Feb. 1, 2010]

NOTE: There is wide latitude within 91.119(d)(1) to operate a helicopter at less than minimum prescribed distances if the operation is conducted without hazard to persons or property. The interpretation of compliance with FAR 91.119, for both end-product and BLM controlled operations, resides with the pilot. The BLM personnel shall coordinate with the pilot to reach mutual agreement to establish a designated observation point(s) prior to commencement of flight operations.

APPENDIX G: 2011 Utilization Studies Data

Utilization Site	UTMs East/North		ORHY	ELCI	STCO	AGSM	AG SPP	POSE	Woody Shrub	KOMA	Russian Wildrye	Total (f)	Total (fx)	Total % Use
	East	North												
MT-1	204507	4445798		10%			37%					20	680	34%
MT-2	202852	4445036	30%	10%			38%					20	700	35%
MT-3	205997	4445967	42%	40%			43%					30	1260	42%
MT-4	208560	4446159	53%				50%		58%			42	2220	53%
MT-5	210013	4447271					40%		58%			47	2010	43%
MT-6	210679	4445982					60%	48%				40	2160	54%
MT-7	209467	4444663	48%	30%			55%					30	1460	49%
MT-8	209043	4443814	57%				50%		40%			24	1200	50%
MT-9	203566	4442024					24%					20	480	24%
MT-10	201980	4440585					43%	41%				38	1600	42%
MT-11	203997	4440891	40%				50%					24	1000	42%
TT-1	209209	4442008	53%				47%					20	1020	51%
TT-2	208342	4442290	50%				54%					19	990	52%
TT-3	203890	4437667	68%			50%						20	1160	58%
TT-4	204042	4437594		50%			55%					20	1080	54%
TT-5	204371	4437229	62%			55%			55%			20	1180	59%
TT-6	203254	4439286				21%			34%			20	560	28%
TT-7	208156	4430810				28%						20	560	28%
TT-8	210455	4431900				27%						20	540	27%
TT-9	199329	4421136	29%						20%			20	520	26%
TT-10	200163	4420695	31%						26%			20	600	30%
TT-11	201246	4421691	29%									21	610	29%
TT-12	202390	4422423	36%									20	720	36%
TT-13	203317	4423507	28%									20	560	28%
TT-14	204892	4427909				28%			57%			22	780	35%
TT-15	203832	4426933			46%	22%						20	800	40%
MK-1	211081	4430477	70%		40%	61%						10	580	58%
MK-2	210580	4430074				60%						10	600	60%
MK-3	209339	4429026				38%			10%			10	320	32%
MK-4	208020	4429213				85%			80%			10	840	84%
MK-5	223628	4440762	74%			70%			70%			10	720	72%
MK-6	217283	4443784	70%			60%			70%			10	660	66%
MK-7	218865	4444374	57%			57%			70%			10	580	58%
MK-8	200799	4427537	70%			60%			60%			10	640	64%
MD-1	198031	4419126							34%	40%		21	770	37%
MD-2	198401	4419390							48%	57%		20	1060	53%
MD-3	198925	4420336							34%	30%		20	640	32%
MD-4	198811	4420244			20%				25%	23%		20	460	23%
MD-5	198749	4419799							18%	16%		20	340	17%
MD-6	200574	4419685			21%	21%			17%			20	400	20%
MD-7	198693	4421051				38%			30%			20	660	33%
MD-8	198013	4421150									26%	20	520	26%
MD-9	203489	4420760				16%			10%	18%		20	320	16%

APPENDIX H: Photo Documentation of 2011 Utilization Studies.

The following photos were taken while conducting utilization studies of key species within the HMA during the spring of 2011

Heavy Use on Indian Ricegrass

Heavy Use

Moderate Use of Indian Ricegrass

Heavy Use, roots pulled out of the ground

Heavy use of woody Species

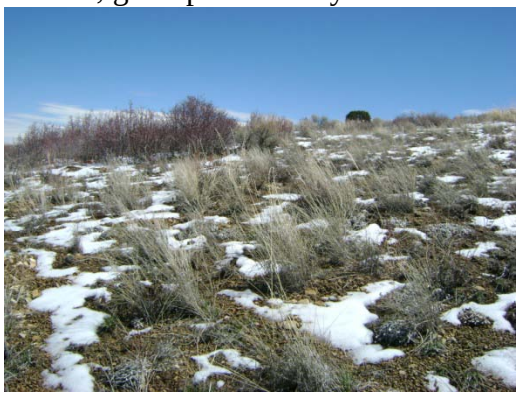
Heavy Use of Indian Ricegrass

Heavy Use, roots pulled out of the ground

Abundant Litter, beginning to incur heavy use

No Use, grass protected by shrub

Slight/No use, plant produced seed head



Light Use

Moderate to Heavy Use

Moderate Use of Western wheatgrass

Light use, abundant residual vegetation

Moderate Use


Heavy use on Indian ricegrass


Heavy Use

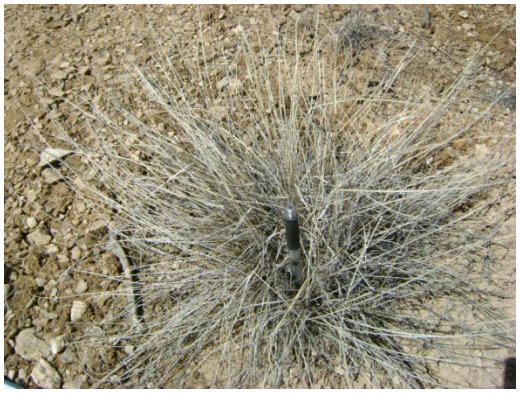

Slight/No use, abundant bunchgrass

Beginning to incur moderate use


No use of Indian ricegrass


Indian Ricegrass beginning to incur heavy use


Beginning to incur heavy use



No use on Indian ricegrass

Moderate use, few bunchgrasses

Slight/No use robust bunchgrasses

Burned area with bunchgrass cover

Few bunchgrasses, abundant bareground

Slight use, robust bunchrasses

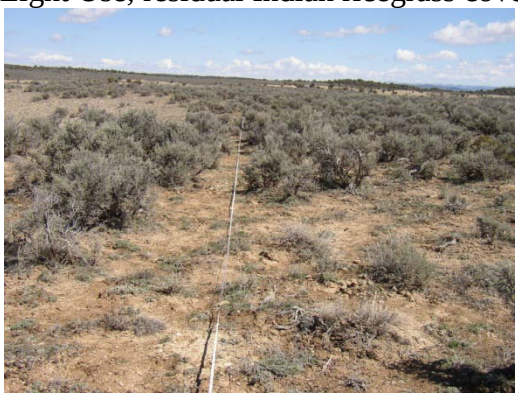
Residual bunchgrass cover

Heavy use on some plants, slight use on others

Heavy Use, little residual cover

Light Use, residual Indian ricegrass cover

Moderate use, residual bunchgrass cover



Heavy use, few bunchgrasses

Moderate use on Indian ricegrass

Heavy use, weedy species invading

No Use on bluebunch wheatgrass

Heavy use on woody species