

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
BILLINGS FIELD OFFICE

**ENVIRONMENTAL ASSESSMENT**

**PRYOR MOUNTAIN WILD HORSE RANGE**

**FY2005: Use of Fertility Control on  
Mares 11 Years of Age and Older  
to Suppress Herd Growth Rates**

Under Direction of the BLM National Research Field Trials  
Wild Horse Fertility Control  
Summer 2005

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## I. INTRODUCTION

With passage of the Wild, Free-Roaming Horses and Burros Act of 1971, Congress found that: “Wild horses are living symbols of the pioneer spirit of the West.” In addition, the Secretary of the Interior was ordered to “manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands.” Since passage of the Act through present day, the Bureau of Land Management (BLM), Billings Field Office (BiFO), has endeavored to meet the requirements of the Act. The procedures and policies implemented to accomplish this mandate have been constantly evolving over the years.

Since 1994, the Pryor Mountain wild horse herd has averaged 158 total horses. Available genetic research (Cothran and Singer, 2000) suggests that maintaining an average of ~140-150 horses on the range might facilitate genetic conservation within the herd. Unfortunately, updated range health and trend studies (NRCS, 2004) provide clear evidence that the designated range is unable to support this number of horses at the present time. Extensive interagency discussions, since the results of the NRCS study were made available, have clearly established that range expansion opportunities within the upper elevations are not possible at this time. Although lower elevation NPS lands may be available to the herd, only a limited number of horses would benefit. **As a result, BLM needs to maintain a smaller herd, attentive to the existing AML of  $95 \pm 10\%$  horses and with minimal size fluctuations, until such time that range improvements and relief from drought facilitate an overall improving trend in rangeland health.** Natural mortality (including the unpredictable impacts of predation), coupled with the proposed level of fertility control is expected to accomplish this goal, without taking the herd below the existing AML.

Within this EA, the Billings Field Manager proposes to apply fertility control to 20 age-specific older wild mares, for the purposes of suppressing herd growth rates, in order to manage for healthy horses on healthy rangelands. The initiation of fertility control treatment of mares in the Pryors began with the 2001 gather, and at that time five yearlings and one 2-year old female received a single-dose (primer) of PZP contraceptive vaccine. The intent was to prepare these mares to receive a single booster of PZP vaccine, allowing one year of infertility and an opportunity to fully mature before becoming pregnant. Subsequent fertility control to additional age-specific mares, under national field trial research protocol, occurred in the summers of 2002, 2003 and 2004. Relevant Environmental Assessments (EAs) and Decision Records can be obtained by contacting BiFO.

The BLM is required to prepare a separate EA for public review and comment prior to proceeding with fertility control on additional age classes of mares in this herd. As such, this document outlines relevant information about the Pryor Mountain wild horse herd and presents alternatives for the suppression of herd growth rates. It also addresses the methods and procedures to be used in implementing this action, and assesses the environmental impacts of such action on the Pryor Mountain Wild Horse Range (PMWHR). This document is also available at: <http://www.mt.blm.gov/bifo/index.html>.

**Public comments to the enclosed EA must be submitted in writing, contain original signatures and be postmarked by Friday, June 10<sup>th</sup>, 2005, which allows for a 30-day comment period.**

The proposed fertility control implementation is scheduled to begin no earlier than July 15<sup>th</sup>, 2005, and will continue until all mares have received a booster vaccine conferring one year of infertility. Any subsequent fertility control efforts, involving age classes of mares not identified in this EA, will be covered by additional environmental assessment documents.

The public is also notified that the BLM intends to carefully monitor the impacts of births and deaths within the herd this year. It is possible that the resulting herd size may require further evaluation of the need for a gather and removal of excess horses later this year. If this is the case, the BLM will release an additional EA, evaluating alternatives for immediate herd size reduction for public review and comment.

## **II. GENERAL AREA, POPULATION DESCRIPTION and BACKGROUND DATA**

**A. LOCATION:** The Pryor Mountain Wild Horse Range (PMWHR) is located in the southeastern portion of Carbon County, Montana, and extends into the northern portion of Big Horn County, Wyoming (maps available at <http://www.mt.blm.gov/bifo/whb/index.html> or by contacting BiFO). The range is approximately 13 miles north of Lovell, Wyoming. The PMWHR was created in 1968 by order of the Secretary of the Interior, Stewart L. Udall. This designation was the first of its kind in the United States, and directs that management of the wild horses be within a balanced program, which considers all public values without impairment to the productivity of the land. Henceforth, this area has been administered for the protection and management of wild horses, wildlife, watershed, archeological, recreational, and scenic values. The order also states that the BLM will manage the range in a manner compatible with the Bighorn Canyon National Recreational area, which is adjacent to East Pryor Mountain.

The PMWHR encompasses about 39,650 acres and includes BLM, National Park Service (Bighorn Canyon National Recreation Area), Custer National Forest (lower Lost Water Canyon), and private lands (Krueger). Natural topographical barriers (westside - Crooked Creek; eastside - Bighorn Canyon), as well as man-made barrier fence lines to the north and south, restrict the majority of horses to available range. Otherwise the Pryor herd freely roams throughout the range, largely unrestricted by internal fences.

The wild horses are seasonally migratory and winter in the lower and mid-elevations where typical snow-depths range from 0-25 cm. The mid-elevation ridges and plateaus are nearly always snow-free because of wind and exposure to winter sunshine. The horses typically do not spend the winter in the subalpine meadows where snow-depths may exceed 1 m for several months. During other times of the year, and especially in summer, horse distribution seems to predominately be in the upper elevations within easy access of forage and nearby water reservoirs.

## **B. POPULATION DEMOGRAPHICS and GENETIC VIABILITY:**

Relevant details regarding the appropriate management level (AML) for the herd, colonial Spanish phenotype, population color balance, demographics, genetic viability, and reproductive fitness were previously addressed within several EAs including MT-010-01-44, MT-010-02-22, MT-010-03-14 and MT-010-04-18. These documents are available by contacting BiFO. The reader is encouraged to review these documents for additional descriptive herd information. Updated information for consideration in the current EA is presented below.

**a) Appropriate Management Level:** Nationally, AML is recorded as the upper limit of a range of adult wild horses (6 months and older), determined through BLM's planning process, to be consistent with the objective of achieving and maintaining a thriving natural ecological balance and multiple-use relationship. The Pryor Mountain Herd Management Plan (HMAP) (June 15, 1984) and the Billings Resource Area Management Plan (Sept. 28, 1984) established an initial stocking rate for the range at  $121 \pm 5\%$  total head of wild horses. AML was revised in July 1992 and set at  $95 \pm 10\%$  total head of horses. National policy recommends that foals are not to be included in AML until they are at least 6 months of age. BLM currently has the legal authority to gather and reduce the herd to this number. BLM also has the legal authority to perform a major roundup and removal of excess horses when the population exceeds 125 head of horses. Documentation for this authority is enclosed in the revision of the Herd Management Plan MT-025-2-18.

BLM has been considering a revision of AML for the herd based on extensive research in areas of herd demographics and genetics, ecosystem health, range condition and trend and updated ecological site inventories. Since 2001, BLM has been conservative in terms of herd size reduction, until all data necessary for the revision is in place. BLM has recognized the rare genetic component of the herd as well as being considerate of range condition and health. The main goal of all interim management documents has been to reduce the herd to a size that would not negatively impact its genetic viability in the short-term or cause irreparable harm to the range.

Genetic research on the Pryor horses (Cothran and Singer, 2000; Gross 2000a, b) indicates that an average long-term herd size of ~140-150 horses appears necessary to support a minimum effective genetic population size. This should be considered critical information if the objective is to manage for a self-sustaining herd. However, BLM's mandate is to manage for a healthy, self-sustaining herd on healthy rangelands. Habitat objectives in the current HMAP are to manage for a slight upward trend in range health. Results of the Natural Resources Conservation Service (NRCS) Pryor Mountain Wild Horse Range Survey and Assessment, received in May 2004, suggest that in order to facilitate these range objectives, the herd should be managed between 45-142 horses. Cumulative impacts, including weather, drought and grazing, have resulted in the apparent trend being down on 76 percent of the area transects with range health functioning at a moderate to a moderate-extreme departure from the historic climax plant community. This report is available on <http://www.mt.blm.gov/bifo/horses/files/index.htm> or by contacting BiFO.

Prior to the completion of this state-of-the-art study, existing evidence suggested that a herd size

averaging about 140-150 horses had resulted in both a healthy, genetically sound and productive herd of wild horses, as well as a thriving and prolonged ecological balance on the range. At this time, it would appear that managing the herd closer to the existing AML ( $95 \pm 10\%$  horses) is necessary to allow for improvement in range conditions. In addition, the BLM intends to consider the management recommendations advanced in the NRCS study in order to facilitate range improvements.

All three land ownership agencies (FS, BLM, and NPS) continue to work on agreements regarding management of the PMWHR. Extensive interagency discussions, since the results of the NRCS study were made available, have clearly established that range expansion opportunities within the upper elevations are not possible at this time (Appendix 2) but may be open for consideration within the lower elevations (Appendix 3). Although lower elevation range on Park Service lands would only benefit a limited number (~12) of horses, both agencies continue discussions regarding these opportunities.

**b) Current Herd Census:** The Pryor Mountain wild horse population comprises a harem band social structure with associated bachelor groups. Individual horses can be recognized by coat color and scars, facial and leg markings, and group association and are tracked annually using a CD-ROM wild horse management database (Appendix 1). Within the last decade, population census and monitoring has comprised a combination of aerial census (a maximum of twice annually) and year-round ground surveys by BLM employees, student interns, and public volunteers. As the composition of harems and dominant stallions is fluid in nature, this information is tracked on an on-going basis primarily from May through November of each year.

Since 1994, the herd has averaged 158 total horses. Current estimates place the population at 139 animals (including one (1) remaining yearling on lower Park Service lands) as of April 8, 2005 (Figure 1; Appendix 1). Based on observed breeding activity and visual observation of mares (Figure 2), a minimum of 25 foals are expected this year from mares between 5 years and 14 years of age. The lack of pregnancy in mares 2-4 years of age and mares 15 years and older can be attributed to the previous use of fertility control in this herd. The impacts of additional winter (2004-2005) mortality and 2005 births on herd size will be determined by field personnel this spring and summer.

**c) Herd Social Structure:** According to available data (BLM monitoring, Hall, 1972; Garrott and Taylor, 1990; Singer et al, 2000), the number of harems within the PMWHR changes due to population demographics and has increased from 18 to 34 in the last decade. This increase has been correlated with a decreasing number of average mares per harem and an overall increase in the number of male horses on the range. In addition, the population is characterized by having one of the highest recorded rates of mare interchange between harem stallions for wild horse herds. Just under an average of 40% of all breeding age mares interchange between harems each year (Figure 3). Sometimes foals are abandoned or injured and subsequently die because of this activity (Figure 4). A higher rate of interchange activity appears to occur among younger mares (Figure 5). This interchange activity has resulted in a fairly fluid or unstable social structure and one where the stallions seem to be the dominant decision-makers on the range.

**d) Herd Age Structure/Sex Ratio:** A typical age structure for a wild ungulate herd would be pyramidal in shape with the majority of animals in the youngest age categories. This has historically been (Perkins *et al.*, 1979) the structure for the PMWHR herd. Currently (Figure 1), there is a tendency for some age groups to be under-represented and either age selective management or mortality has contributed to this condition. The impact of more recent mountain lion predation on the herd is noted in the low number of surviving yearling and two-year old horses. The maximum age of horses on the range appears restricted, with limited numbers of horses older than 16-17 years. It is probable that environmental conditions such as severe winters have contributed to this pattern.

The herd has experienced wide variations in sex ratio (Figure 6) over the years. This variation has especially been seen in the foal crop during the last decade. Researchers (Singer *et al.*, 2000) have indicated that an emphasis on the production of male foals suggests females may be in overall better condition. The result has been a herd sex ratio oscillating around even numbers of males and females.

**e) Mare Foaling Rates and Foal Survival:** Current estimates of herd foaling rates are indicative of a healthy and productive wild horse population. Research efforts characterize the herd as having a moderate (recorded) foaling rate averaging ~52% (Figure 7), with significant variation in the surviving foaling rate (6 to 55%). There is also noted variation in foaling rates among different age classes of mares (Figure 8). Long-term trends in foal production indicate an average birth of 33 foals per year with an average of 24 surviving foals (Figure 9). Foaling takes place primarily in the months of May-June (Figure 10) although some variation is present each year. Mares aged 5-13 years appear to primarily contribute to foal production (Figures 8 and 11). Foaling in younger and older mares has been limited by fertility control since 2002. Harem stallions are primarily 5-15 years of age (Figure 17).

Foal survival has been increasingly (1996-2004) impacted by mountain lion and black bear predation as well as mare interchange-related foal injuries and foal abandonment (Figure 12). This level of foal loss was not recorded pre-1996. Increases in foaling rates by 3-year old mares in 2000 and 2001 (Figures 11 and 13) may have been a population response to reduced foal survival in 1999 and 2000 (Figure 12).

**f) Herd Natural Mortality:** Data from earlier research studies (see MT-010-01-44) have been used to define patterns of natural mortality (due to predators, disease, and environmental exposure) within the Pryor Mountain wild horse herd. These data have been compared to known deaths and carcass retrieval information from more recent studies (Figure 14), as well as age-class related survival estimated from tracking known individual horses. There appears to be limited mortality across most age classes, with more deaths occurring among younger and older horses. Foal and yearling losses have been especially high in more recent years. Mares appear to be susceptible to a shorter lifespan, perhaps as a result of energy expenditure over years of foal production.

**g) Herd Growth Rate:** Annual rates of population growth have varied tremendously (Figure 15) in this herd. Management objectives in the last decade have included efforts to stabilize herd

size in order to relieve grazing pressure on critically-used areas of the range. Grazing pressure is often accentuated by wide fluctuations in herd size. Herd growth rates have averaged (+) 10% in the last decade. However, with decreasing foal survival, limited use of age-specific fertility control and natural attrition in older horses, the herd growth rate dropped to “zero” in 2003 (births and deaths were equal) and below “zero” last year (deaths exceeded births as shown in Figure 16). A short-term negative growth rate in the herd is not considered detrimental to overall herd survival unless it continues for an extended period of time. Management will need to continue to carefully track the balance of births, deaths and management impacts in this herd.

**h) Herd Genetic Viability:** According to recent studies by Cothran (2002) and Cothran and Singer (2000), current levels of genetic diversity within the Pryor Mountain herd appear to have limited vulnerability to inbreeding depression. In fact, genetic variation is relatively high for a wild horse population and well above the mean for domestic breeds. The impact of inbreeding is apparently much less than would be expected in a horse population of its current size. Since the inevitable loss of genetic variation could reduce long-term adaptability and survivability of the herd, it is important to continue to regularly track herd diversity.

A primary concern is that the current level of herd genetic variation is based on high allelic diversity within the herd. Over 50% of this material is considered rare and present at low frequency levels. These alleles are at a relatively high risk of being lost, especially at low population sizes (<200 animals). Due to the relatively long generation time of horses (~10 year span) and the long reproductive life span of individual horses, maintenance of genetic variability within the population is not yet at a critical level. Also there are several alternative management strategies that can be used to promote genetic conservation within the herd (BLM Wild Horse and Burro Population Viability Forum Recommendations, 1999).

From a management standpoint, increasing population size is not always an effective method of conserving herd genetic health. For example, if management suggests setting a conservation goal for maintaining 90% of existing diversity over the next 200 year period, then Gross (2000a) has demonstrated that the Pryor herd size would need to be increased to levels far beyond that which the Pryor range could sustain (see MT-010-01-44). Individual-based genetic information (Cothran and Singer, 2000) suggest that maintaining an average of ~140-150 horses on the Pryors might facilitate genetic conservation within the herd. Unfortunately, updated range health and trend studies (NRCS, 2004) provide clear evidence that the designated range is unable to support this number of horses at the present time.

However, other management alternatives do exist, and these concepts and impacts have been modeled for the Pryor herd and subsequently published in peer-reviewed journals by Gross (2000b). Any management action that serves to delay the age of first reproduction for mares (by removing or contracepting young mares) would reduce the number of lifetime matings for those animals. This would act to reduce the total loss of genetic material from the herd (genetic drift), and serve to conserve genetic variation over time. BLM contracepted younger mares in the herd in 2001-2004 with these genetic benefits in mind.

Research has also shown that any management activity which serves to increase male

participation in breeding (a herd sex ratio slightly in favor of males resulting in more, smaller harems) will promote genetic diversity within the herd. Observational monitoring has noted both an increase in harem numbers as well as relatively uniform foal contribution by individual stallions since 1996 (Figures 17 and 18).

Genetic diversity can also be enhanced within the herd with the introduction of 1-2 young mares every horse generation or approximately every 10 years. Generally, these young mares are readily impregnated by breeding-age stallions. If necessary, BLM could consider this approach of genetic supplementation for the Pryor herd. The logical source of mares for these introductions would be progeny of previously adopted Pryor horses of which there is sizeable local pool in the Lovell, Wy area.

### **III. PROPOSED MANAGEMENT ACTION:**

#### **Use of Fertility Control on Mares 11 Years of Age and Older For Partial Suppression of Herd Growth Rates**

**A. PURPOSE: The Billings Field Manager proposes to apply fertility control to 20 age-specific older wild mares, for the purposes of suppressing herd growth rates, in order to manage for healthy horses on healthy rangelands.**

Under the proposed action, 20 mares aged 11 years and older ((Figure 1; Appendix 1) would receive primer and booster doses (or just booster doses) of a one-year immunocontraceptive Porcine Zona Pellucida (PZP) vaccine. Spring 2005 pregnancy data (Figure 2) indicate that 11 of these mares will probably foal in 2005. It is unlikely that these mares will conceive in 2005 nor produce a foal in 2006. Fertility control applied in 2005 would induce one year of infertility in 2006 and reduce the 2007 foal crop. Seven older mares are currently infertile due to previous contraception, and the pregnancy status for the remaining 2 mares is undetermined at this time (Figure 2).

Most mares on the Pryors start producing by age three and then steadily produce foals either every year or every other year. Long-term trends indicate an average of 33 foals produced each year (Figure 9). Age classes of mares 11 to 14 years have produced an average of 2-3 foals per year in the last decade. Contracepting these mares might reduce total herd foal production by 20% in 2007. All mares 11 years and older have already made genetic contributions to the herd (data on file at BiFO).

Generally, foal production drops considerable by the 14<sup>th</sup> year and ceases by the 16<sup>th</sup> year (Figures 8, 11 and 13). Most mares do not live much beyond this age (Figure 1). Mares currently 15 years and older (7 mares) have previously received fertility control, for compassionate-use reasons, with the intent of contracepting them for the rest of their lives. Contraception permits older mares a year or more of existence on the range in better physical condition (Turner and Kirkpatrick, 2002).

BLM is not proposing to contracept yearling and two-year old mares at this time. There are no yearling fillies currently in the herd and only 5 two-year old fillies on the range. The 2-year old fillies were primed but not boosted last year (as yearlings), due to concerns over high predation impacts on the herd. Therefore, about 50% of the age class may conceive in 2005 and foal in 2006. This will result in a potential for 2-3 foals. Given concerns for potential on-going predation impacts this year, BLM is proposing that it is not cost-effective, nor of benefit to the herd, to booster these mares this year.

**B. NEED:** Since 1994, the PMWHR herd has averaged 158 total horses. Available genetic research (Cothran and Singer, 2000) suggests that maintaining an average of ~140-150 horses on the Pryors might facilitate genetic conservation within the herd. Unfortunately, updated range health and trend studies (NRCS, 2004) provide clear evidence that the designated range is unable to support this number of horses at the present time. Extensive interagency discussions, since the results of the NRCS study were made available, have clearly established that range expansion opportunities within the upper elevations are not possible at this time. Although lower elevation NPS lands may be available to the herd, only a limited number of horses would benefit. **As a result, BLM needs to maintain a smaller herd, attentive to the existing AML of 95 ± 10% horses and with minimal size fluctuations, until such time that range improvements and relief from drought facilitate an overall improving trend in rangeland health.**

**C. JUSTIFICATION:** Current estimates place the population at 139 horses (Figure 1; Appendix 1). A minimum of 25 foals are expected this year with herd size possibly exceeding 160 horses by the end of the foaling season. However, BLM does expect some level of foal loss and/or predation and natural attrition of older horses this year. Although it is difficult to estimate the level of these impacts, an average of 27 horses has been lost annually from the herd since 1996. Thus, it is possible that births and deaths may cancel any herd growth as seen in 2003. It is also possible that intensive predation may result in almost a complete loss of the foal crop, as in 2004, with a resulting negative growth rate for the herd.

Given, the current status of rangeland health on the Pryors, the management goal is to try to maintain stability in herd growth at a lower population size. Natural mortality in the younger and older horses (including the unpredictable impacts of predation), coupled with the proposed level of fertility control, is expected to accomplish this goal, without taking the herd below the existing AML of 95 ±10% horses.

Impacts of the proposed action on herd demographics including size, age structure, sex ratio, and growth rates over time, have been evaluated using WinEquus (Wild Horse Population Model Version 1.4; April 2, 2002) developed by Dr. Stephen Jenkins, Associate Professor, University of Nevada, Reno and available at <http://unr.edu/homepage/jenkins>. Forecasts of modeling efforts will be discussed under cumulative impacts in this EA (Section V. B.1). Parameters and output for specific population modeling runs are on file at BiFO.

**D. OBJECTIVES:** The objectives of the proposed action are to:

**1) apply fertility control to 20 age-specific older wild mares, for the purposes of partially suppressing herd growth rates, in order to manage for healthy horses on healthy**

rangelands;

**2) specifically provide fertility control primers and boosters (at least one month apart) of a 1-year PZP vaccine with 90% efficacy to 13 mares that are 11 to 14 years of age (Appendix 1);**

**3) specifically provide fertility control boosters of a 1-year PZP vaccine with 90% efficacy to 7 mares that are 15 years of age and older (Appendix 1);**

**4) conduct a safe, successful and minimally-intrusive remote-delivery of the fertility control vaccine in the field (Appendix 4);**

**5) support recommendations within the Wild Horse and Burro Strategic Research Plan and conduct monitoring under research protocol within the BLM National Wild Horse Fertility Control Field Trial program including impacts on herd foaling rates, foaling seasonality, herd genetic viability, and individual mare body condition, fitness and behavior.**

**E. PROPOSED FERTILITY CONTROL AGENT:** At this time, all published research indicates that the Immunocontraceptive Porcine Zona Pellucida (PZP) vaccine meets BLM requirements for an ideal contraceptive agent including criteria for safety and efficacy. When injected, PZP vaccine acts as an antigen and causes the mare's immune system to produce antibodies. These antibodies then bind to eggs in the mare's ovaries and effectively block sperm binding and fertilization (ZooMontana, 2000). The vaccine is relatively inexpensive (\$21 per dose), can be remotely administered in the field, and requires a single annual booster dose to confer infertility for one breeding season. Extensive research has demonstrated that contraceptive efficacy is 90% for mares treated twice in the first year and annually thereafter (Turner and Kirkpatrick, 2002). Research has also shown that contracepted mares clearly show improvements in body condition and may actually live longer (Turner and Kirkpatrick, 2002). From a mare physiological standpoint, PZP contraception appears to be temporary (Kirkpatrick and Turner, 2002), does not appear to cause out-of-season births (Kirkpatrick and Turner, 2003), and has no ill effects on ovarian function if contraception is not repeated for more than 5 consecutive years on a given mare.

If mares are already pregnant, research has shown that PZP vaccine will not affect normal development of the fetus, hormone health of the mare or behavioral responses to stallions (see EA# MT-010-02-22, Appendix 6). Recent behavioral studies with the Assateague Island and Shackleford Banks wild horses (Powell, 1999; Rogers, 2001) have shown that contracepted and non-contracepted mares had virtually identical activity budgets, associated in a similar manner with the harem stallion and showed no increase in harem exchange behavior or change in their social status during the study. All mares affected by the proposed action would continue to be monitored for body condition and aspects of social behavior. The latter would be compared to existing baseline data and control studies (Anderson, 1998; Jenson, 2000; Harty, 2000; Meredith, 2001, BRD/USGS, 2003, 2004).

**F. VACCINE QUALITY and REMOTE-DELIVERY PROTOCOL:** All PZP vaccine used on mares within the PMWHR would be provided by the Science and Conservation Lab (SCC), ZooMontana and subjected to quality control testing (see EA# MT-010-02-22, Appendix 7). All documented aspects of PZP vaccine provision, mare selection, vaccine remote-delivery, dart

recovery, record keeping, veterinary emergencies, and media relations would be strictly adhered to by all participants in the proposed action (Appendix 4). This protocol shall serve as the Standard Operating Procedures (SOPs) for this proposed management action. Implementation of the SOPs would take into consideration all safety concerns, individual animal health and condition, seasonal distribution of the horses, as well as local weather and environmental considerations.

Due to known summer horse distribution during the months of July, August and September (see EA# MT-010-02-22, Appendix 8), it is anticipated that most darting activity would take place in the upper elevations of the PMWHR. Minimal darting activity is also expected on the NPS portion (within the Bighorn Canyon National Recreation Area) of the horse range and within upper-elevation Custer National Forest lands (USFS) outside of the designated horse range. Permission was sought and has been granted by the responsible management agencies to dart in these other areas, as necessary.

**G. PERMISSION and CRITERIA for VACCINE USE:** The Humane Society of the United States (HSUS) has made the PZP vaccine available to the BLM under the Investigational New Animal Drug exemption (INAD #8857) filed with the federal Food and Drug Administration (FDA) (see EA# MT-010-02-22, Appendix 9). As a condition of using the PZP vaccine, the HSUS expects the BLM to follow the Draft Criteria for Immunocontraceptive Use in Wild Horse Herds recommended by the Wild Horse and Burro National Advisory Board in August 1999 (see EA# MT-010-02-22, Appendix 10). BiFO, in its management of the PMWHR, is in full compliance with all pertaining criteria.

**H. CONFORMANCE with NATIONAL RESEARCH:** The BLM has developed a long-term research strategy for the Wild Horse and Burro Program. A final draft of the Strategic Research Plan was reviewed and supported by the National Wild Horse and Burro Advisory Board in August 2002 and the BLM Director's Science Advisory Board in January 2003. Within this strategy, continuing research on fertility control is identified as a high priority, and directions are provided in the National Wild Horse Fertility Control Field Trial Plan (FCFTP) (Singer and Coates-Markle, 2002). The implementation of additional fertility control field trials, under this research protocol, began in the summer 2002.

The proposed action would adhere to all guidance and research protocol set by the oversight documents. The intent of this research is to answer those remaining questions and concerns about fertility control using PZP that are best answered on free-ranging populations in the wild. The plan details protocols for injections, experimental design, and research methods that will be employed to evaluate effects of PZP on free-ranging animals. The research focuses on the effects of immunocontraceptive treatment on seasonality of foaling, any possible compensatory reproduction of mares post-treatment, duration of estrus cycles, population growth rates, and harem behavior. The behavior and fertility of the treated mares will be studied both during the treatment phase and for a minimum of two years post-treatment to assure that a return to normal fertility occurs. The first annual report detailing 2003 field efforts (BRD/USGS, 2003) is on file at BiFO. The second annual report for the 2004 field season is pending.

**I. AUTHORITY for PROPOSED ACTION:** The Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) as amended, Section 3(b)(1), states that the Secretaries of the Interior and Agriculture shall “determine appropriate management levels of wild free-roaming horses and burros on areas of public lands; and determine whether appropriate management levels should be achieved by the removal or destruction of excess animals, or other options (such as sterilization or natural controls on population levels).” The authority may also be found at Title 43 of the Code of Federal Regulations (CFR-4700, Protection, Management and Control of Wild and Free-Roaming Horses and Burros).

With implementation of the proposed action, age-specific wild horse mares would be contracepted for a minimum one-year period in accord with 43 CFR 4700.0-6 which identifies that “...wild horses shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat,” and with Public Law (PL) 92-195 Sec 3 (b) (2) which identifies the need to maintain appropriate management levels of wild horses within their herd management area (HMA).

**J. CONFORMANCE with EXISTING LAND USE PLANS:** The Billings Resource Management Plan Final EIS (Sept.1984), Record of Decision, has been reviewed, and the proposed action is in conformance with objectives of managing a balance between a healthy and viable population of wild horses and improvements in range condition, wildlife habitat, and watershed condition. The Pryor Mountain Wild Horse Range Herd Management Plan (BLM-MT-PT-84-019-4321/June 1984) provides the authority to manage the horse herd at an established appropriate management level (AML) and make management decisions on the basis of animal type, conformation, color, age, sex, location and free-roaming behavior. The plan directs that management of wild horses be within a balanced program that considers all public values without impairment to the productivity to the land.

BLM is developing a revision of the PMWHR Herd Management Plan based on extensive research in areas of herd demographics, genetics and population control, ecosystem health, range condition and trend and updated ecological site inventories. The appropriate management level (AML) for the herd has been an important consideration. Since 1994, the PMWHR herd has averaged 158 total horses. Available genetic research (Cothran and Singer, 2000) suggests that maintaining an average of ~140-150 horses on the Pryors might facilitate genetic conservation within the herd. Unfortunately, updated range health and trend studies (NRCS, 2004) provide clear evidence that the designated range is unable to support this number of horses at the present time. Extensive interagency discussions, since the results of the NRCS study were made available, have clearly established that range expansion opportunities within the upper elevations are not possible at this time. Although lower elevation NPS lands may be available to the herd, only a limited number of horses would benefit. As a result, BLM needs to maintain a smaller herd, attentive to the existing AML and with minimal size fluctuations, until such time that range improvements and relief from drought facilitate an overall improving trend in rangeland health.

**K. ECONOMIC ADVANTAGES of FERTILITY CONTROL:** Contemporary cost projections were computed for several alternative strategies that BLM could use to manage the Pryor Mountain wild horse herd (Bartholow, 2004). The alternatives included (1) existing

contraceptive, gather and selective removal methods; (2) longer duration contraceptive techniques; (3) manipulation of herd sex ratio; and (4) a gather and removal-only scenario. Costs were projected for a 20-year economic life using the Jenkins wild horse population model and cost estimates from BLM that reflect this herd's specific removal, adoption, and contraceptive application expenses. This document is available at <http://www.mt.blm.gov/bifo/index.html> or by contacting BiFO. Important findings include:

- Treatment with contraceptives using protocol in the proposed action is predicted to be approximately 50% less costly than gather and removal management alone.
- Annual application via remote-darting is cost-effective on this herd compared with more “conventional” gather and treat contraceptive applications.

**IV. ALTERNATIVE MANAGEMENT ACTIONS:** The following represents a reasonable range of alternatives based on the issues and goals identified through previous public scoping efforts and results of multi-agency, multi-institutional research efforts and discussions on herd management.

**A. Use of a Population Gather to Reduce Herd Size in Combination with Fertility Control on Mares 11 Years and Older for Suppression of Herd Growth Rates:**

The existing AML for this herd (revised in July 1992) is set at  $95 \pm 10\%$  total head of horses. BLM currently has the legal authority to gather and reduce the herd to this number. BLM also has the legal authority to perform a major gather and removal of excess horses when the population exceeds 125 head of horses (MT-025-2-18).

Since 2001, BLM has been considering a revision of AML for the herd based on extensive research. The main goal of all interim management documents has been to reduce the herd to a size that would not negatively impact its genetic viability in the short term or cause irreparable harm to the range. Habitat objectives in the current HMAP are to manage for a slight upward trend in range health. Results of the NRCS Pryor Mountain Wild Horse Range Survey and Assessment suggest that in order to facilitate these range objectives, the herd should be managed between 45-142 horses.

Current estimates place the population at 139 horses (Figure 1; Appendix 1). A minimum of 25 foals are expected this year with herd size possibly exceeding 160 horses by the end of the foaling season. Thus the estimated 2005 herd size would indicate the need to excess approximately 50-60 animals. However, BLM does expect some level of foal loss and/or predation and natural attrition of older horses this year. Although it is difficult to estimate the level of these impacts, an average of 27 horses has been lost annually from the herd since 1996. Thus, it is possible that births and deaths may cancel any herd growth, resulting in no change in herd size, or that intensive predation/death loss may actually result in a decrease in herd size.

Given, the current status of rangeland health on the Pryors, the management goal is to try to maintain stability in herd growth at a lower population size. Natural mortality in the younger and

older horses (including the unpredictable impacts of predation), coupled with the proposed level of fertility control, is expected to accomplish this goal without the risk of reducing herd size below the existing AML of 95 ±10% horses. Given the uncertainty of natural mortality impacts with this herd, BLM is concerned that an aggressive gather and removal effort, in combination with proposed fertility control efforts, may result in the herd dropping to a level that will have serious negative impacts on genetic viability.

These concerns are supported by outcomes of population modeling using WinEquus (Wild Horse Population Model Version 1.4; April 2, 2002). Modeling efforts of this alternative forecast that under average natural mortality impacts, the herd would oscillate around 100 total horses over the next decade with a slight declining growth rate of (-) 2-3%. This is very similar to anticipated herd size by using the proposed management action of fertility control only. Differences between these two alternatives are minimal because of the reduced numbers of young animals currently in the herd which are the target age classes for removal and adoption efforts. If increased mortality (due to prolonged predation impacts) continues at the level of 2004, then this gather and fertility control option might result in the herd being reduced to 60% below AML with a declining growth rate of (-) 13%. Parameters and output for these population modeling runs are on file at BiFO.

Given the limited additional benefits of population control afforded by using a gather in combination with fertility control versus the proposed fertility control action only, and the possible deleterious impacts to herd viability under potential predation impacts, the BLM considered this alternative but eliminated it from further analysis at this time.

#### **B. Use of Fertility Control on All Ages of Wild Mares to Suppress Herd Growth Rates:**

Under this alternative, all breeding-aged mares (3 years and older) would receive contraception from a one-year 90% efficacious PZP vaccine. The vaccine would be remotely-delivered in the field. Population modeling of this alternative, using WinEquus (Wild Horse Population Model Version 1.4; April 2, 2002), forecasts that under average natural mortality impacts, the herd would oscillate around 60-80 total horses over the next decade with a declining herd growth rate of (-) 9 to 10%. If increased mortality (due to prolonged predation impacts) continues at the level of 2004, then this level of fertility control, applied repeatedly to the herd, might result in the herd being reduced to 60% below AML with a declining growth rate of (-) 14%. Parameters and output for these population modeling runs are on file at BiFO.

Currently, it is not a PMWHR management goal to completely depress herd growth rates by fertility control. The intent of the proposed management action is to suppress growth rates and maintain stability in herd growth at a lower population size. Natural mortality in the younger and older horses (including the unpredictable impacts of predation), coupled with the proposed level of fertility control is expected to accomplish this goal, without the risk of reducing herd size below the existing AML of 95 ±10% horses. Given the uncertainty of natural mortality impacts with this herd, BLM is concerned that aggressive use of fertility control may result in the herd dropping to a level that will have serious negative impacts to genetic viability. This alternative was therefore considered but eliminated from further analysis due to unacceptable impacts on the

herd at this time.

### **C. No Action Alternative: No Herd Size or Growth Rate Management:**

Under this alternative, no mares would receive fertility control for herd growth suppression, nor would a gather occur for an immediate reduction in herd size.

Population modeling of this alternative, using WinEquus (Wild Horse Population Model Version 1.4; April 2, 2002), forecast that under average natural mortality impacts, the herd would oscillate around 130-150 total horses over the next decade with a herd growth rate of close to zero. If increased mortality (due to prolonged predation impacts) continues at the level of 2004, then this option might result in the herd being reduced to 40% below AML with a declining growth rate of (-) 11%. Parameters and output for these population modeling runs are on file at BiFO.

Under this alternative, natural mortality may likely result in no increases in herd size but also no significant decreases in herd size. If predation impacts continue at very high levels for a decade, we would see a reduction in herd size. Given the current status of rangeland health on the Pryors and the continuation of over seven years of drought, the management goal is to try to maintain stability in herd growth at a lower population size. Natural mortality in the younger and older horses (including the unpredictable impacts of predation), coupled with the proposed level of fertility control is expected to accomplish this goal without the risk of reducing herd size below the existing AML of 95  $\pm$ 10% horses.

Thus, this alternative was considered but eliminated from further analysis because of the likelihood of a static or possibly increasing herd size under a no management scenario. BLM recognizes that predation impacts are unpredictable and must be monitored from year to year. At this time, however, based on results of the NRCS study, the designated range must be afforded relief from grazing impacts to allow for improvements in rangeland health.

## **V. AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:**

**A. AFFECTED ENVIRONMENT:** : The purpose of this section is to provide the reader and decision-makers with a listing of the resource values which are known to occur within the Pryor Mountain Wild Horse Range. Detailed descriptions and discussions of these resource values can be found in the Affected Environment, Environmental Impacts and Mitigation Measures section of the EAs for the FY2001, FY2002, FY2003 and FY2004 PMWHR management decisions (MT-010-1-44, MT-010-02-22, MT-010-03-14 and MT -010-04-18 respectively). These documents are available by contacting BiFO and the reader is encouraged to review these documents. Updated information for consideration in the current EA is presented below.

**Table 1. Summary of Critical Elements & Other Resources of Concern within The Human Environment.**

Element	Present	Not Present	Element	Present	Not Present
Sensitive, Threatened or Endangered Plant Species	X		Range and Watershed Condition	X	
Cultural and Paleontological Resources	X		Native American Religious Concerns	X	
<b>Wilderness Study Area</b>	X		Sensitive, Threatened or Endangered Wildlife Species	X	
Water Quality (surface or ground water)	X		Fisheries Habitat	X	
<b>Visual Resources Recreation, and Hunting</b>	X		<b>Areas of Critical Environmental Concern (ACECs)</b>	X	
Climate and Air Quality	X		Wetlands and Riparian Areas	X	
<b>Hazardous Waste</b>	X		Livestock Grazing and Trailing	X	
<b>Pryor Mountain Wild Horses</b>	X		<b>Vegetation</b>	X	
Soils	X		<b>Terrestrial Wildlife</b>	X	
Social Economic Concerns	X		Forestry/Timber	X	

The following resources of concern, although present, were determined not to be affected or impacted by the proposed action and will not be discussed further in this EA: Climate and Air Quality; Cultural and Paleontological Resources; Threatened, Endangered, Candidate, or Sensitive Wildlife Species; Sensitive, Threatened or Endangered Plant Species; Range and Watershed Condition; Soils; Water Quality (Surface or Ground Water); Native American Concerns; Social Economic Concerns; Forestry/Timber; Fisheries Habitat; Wetlands and

Riparian Areas; Livestock Grazing and Trailing. The remaining resources (**in bold**) will be evaluated for potential impacts and mitigation measures.

## **B. ENVIRONMENTAL IMPACTS and MITIGATION MEASURES:**

### **Use of Fertility Control on Mares 11 Years of Age and Older For Partial Suppression of Herd Growth Rates**

Resources impacted by the proposed action will be evaluated for direct, indirect and cumulative consequences. Mitigation measures will be provided as needed. No irretrievable or irreversible impacts to any resource value are anticipated (with the exception of a possible 20 wild mares which may be successfully contracepted for one year only) with implementation of the proposed action.

**1) Pryor Mountain Wild Horse Herd:** The intent of the proposed management action is to suppress growth rates and maintain stability in herd growth at a lower population size. Natural mortality in the younger and older horses (including the unpredictable impacts of predation), coupled with the proposed level of fertility control is expected to accomplish this goal, without the risk of reducing herd size below the existing AML of 95  $\pm$ 10% horses. The proposed action incorporates proven Standard Operating Procedures (SOPs) which have been developed over time (Appendix 4). These SOPs represent the “best methods” for ensuring quality results, minimizing risks and reducing impacts associated with this activity. All activity would be carried out according to current BLM, HSUS and ZooMontana policy with the intent of conducting as safe and humane an operation as possible. In addition, the proposed action would also adhere to all guidance and research protocol set by the BLM National Wild Horse Fertility Control Field Trial program (FCFTP). Protocol have been specifically developed for remote-delivery techniques of fertility control vaccine. If conditions warrant, and animal health or welfare is in jeopardy at any time, remote-darting would be delayed or halted.

#### Direct Individual Impacts:

Impacts to the wild horses take the form of direct and indirect impacts and may occur on either the individual or the population as a whole. Direct individual impacts are those impacts which occur to individual horses and are immediately associated with implementation of the proposed action. These impacts include stress associated with the remote-darting activity for delivery of the fertility control vaccine. The intensity of these impacts vary by individual and are indicated by behaviors ranging from nervous agitation to physical distress. There are no indications that these direct impacts persist beyond a short time following the stress event. There would be an additional impact to individual animals at the isolated injection site following receipt of the dart and vaccine. These impacts (granulomas, abscesses) are monitored on a regular basis under research protocol set by the FCFTP and have been discussed at length in reviewing previous treatment efforts with the Pryor horses (BRD/USGS, 2003, 2004). Mortality and/or permanent injury of individuals from this impact is unlikely.

In order to mitigate the impacts of the proposed fertility control, all vaccine would be controlled,

handled and administered by trained, certified and experienced wildlife darters. These BLM or BRD-USGS personnel (see Appendix 4) would be on-site during all phases of the operation. They would be responsible for the accurate identification of individual age-specific mares. A contract veterinarian would be on-call, at all times during the operation. Possible veterinary emergencies have been discussed in detail within the SOPs. Observers are welcome, but in order to decrease additional stress and disruption to the animals and the operation, would be asked to remain a safe distance from the animals during all phases of darting (see Appendix 4).

#### Indirect Individual Impacts:

Indirect individual impacts are those impacts which occur to individual horses after the initial stress event and may develop as a result of the application of fertility control vaccine. Some of these impacts have yet to be noted and documented for wild horses in the scientific literature but may include increased social disorder among the horses and/or a prolonged foaling season. The proposed action may also result in an opportunity for increased fitness and body condition in a maximum of 20 older mares proposed for treatment. Other potential physiological impacts of the PZP vaccine were discussed under the specifics of the proposed action (Section III.E.). All mares subjected to fertility control would continue to be monitored for aspects of social behavior, body condition and foaling under the guidance and research protocol set by the FCFTP. Behavioral data would be compared to existing baseline data and control studies on the Pryors (Feist, 1971; Anderson, 1998; Jenson, 2000; Harty, 2000; Meredith, 2001; BRD/USGS, 2003, 2004).

#### Direct Population Impacts:

Population-wide direct impacts are immediate effects which would occur during or immediately following implementation of the proposed action. Direct population-wide impacts might consist of a heightened awareness of human presence. This is likely to be temporary in nature but may persist for several days following the darting activity. Repeat remote-darting activity in 2003 and 2004 did not appear to cause additional horse/harem sensitivity or stress beyond monitored levels in 2002 (BRD/USGS, 2003, 2004).

#### Indirect Population Impacts:

Population-wide indirect impacts would not appear immediately as a tangible effect and are more difficult to quantify. These are primarily associated with the use of fertility control drugs and reductions in short-term fecundity in treated wild mares. A total of 20 mares would be affected. Fertility control applied in 2005 would induce one year of infertility in 2006 and could possibly reduce the 2007 foal crop by as much as 20%.

Older age classes of mares (11 to 14 years) have produced an average of 2-3 foals per year in the last decade. Contracepting these 13 mares might reduce total herd foal production by 20% for one year (2007). Generally foal production drops considerably by the 14<sup>th</sup> year and ceases by the 16<sup>th</sup> year. Mares currently 15 years and older (7 mares) have previously received fertility control, for compassionate-use reasons, with the intent of contracepting them for the rest of their lives. The resulting reduction in foal production from continuous contraception of these mares is on the order of 1-2 foals a year per age class.

#### Cumulative Herd Demographic Impacts:

This proposed action has been evaluated for cumulative impacts to the demographics (size, age

structure, sex ratio) of the herd over time using WinEquus (Wild Horse Population Model Version 1.4; April 2, 2002). Parameters and output for these population modeling runs are on file at BiFO. Modeling efforts forecast that the cumulative impacts of the proposed management action are not expected to reduce herd growth rates below a sustainable level under average conditions of natural mortality. The herd is forecasted to oscillate around 100 total horses over the next decade with a slight declining growth rate of (-) 2-3%. If increased mortality (due to prolonged predation impacts) continues at the level of 2004, then the proposed action, repeated over a prolonged period, might result in herd size being reduced to 50% below AML with a declining growth rate of (-) 13%. BLM will need to continue to monitor the impacts of natural mortality and predation on this herd in order to evaluate additional management efforts.

#### Cumulative Herd Genetic Impacts:

No cumulative impacts to the long-term viability of the herd are expected with the proposed action. All mares 11 years and older have already made genetic contributions to the herd (data on file at BiFO). There would be minimal impact to the genetic diversity of the herd by reducing individual mare lifetime contribution by an estimated 1-2 foals. Given current levels of genetic diversity in the Pryor horses, suppressing herd growth rates over the short-term, such that the herd oscillates around the current AML of about 100 head, will not result in deleterious long-term genetic impacts (Gus Cothran, pers. comm., letter on file at BiFO). It will be important that BLM makes every effort to maintain the reproductive core of the herd. It will also be important that BLM continues to monitor herd genetics and considers either increasing herd size and/or introducing new genetic material (in the form of 1-2 young mares) if it becomes necessary to manage the herd at current AML for more than five years.

**2) Wilderness Study Areas (WSA):** Impacts and mitigation measures pertaining to the proposed actions have been previously addressed in the Affected Environment, Environmental Impacts and Mitigation Measures section of the EA and Gather Plan for the FY2001 PMWHR Gather and Selective Removal (MT-010-1-44) and the EA for the Humane-Use of Fertility Control on Select Young Wild Horse Mares (MT-010-02-22). These documents are available by contacting BiFO. The reader is encouraged to review these documents.

**3) Visual Resources, Public Recreation and Hunting:** Impacts and mitigation measures pertaining to the proposed action have been previously addressed in the Affected Environment, Environmental Impacts and Mitigation Measures section of the EAs for the FY2001 (MT-010-1-44), FY2002 (MT-010-02-22) and FY2003 (MT-010-03-14) PMWHR management decisions. These documents are available by contacting BiFO. The reader is encouraged to review these documents. Updates on remote-darting activity will be made available upon request. The public and/or media are encouraged to contact BiFO (405-896-5013) with questions or for information.

**4) Areas of Critical Environmental Concern (ACEC):** The East Pryor Mountains (including the PMWHR) were designated as an ACEC in March 1999. The area is to be managed per VRM Class II objectives. Most horse access and darting activities are likely to happen on foot within reasonable hiking distances of wilderness roads. Therefore, any impacts would be considered as temporary disturbances and no irretrievable, irreversible, or cumulative impacts to any identified ACEC values are anticipated with implementation of the proposed action.

**5) Vegetation:** Adverse impacts to vegetation with implementation of the proposed action would include slight surface disturbance and trampling of native vegetation, to some extent, during the darting process. Most horse access and darting activities are likely to happen on foot within reasonable hiking distances of wilderness roads. Therefore any impacts would be considered as temporary disturbances and no irretrievable, irreversible, or cumulative impacts to vegetation are anticipated with implementation of the proposed action.

**6) Terrestrial Wildlife:** Under the proposed actions, the potential exists for a temporary displacement of wildlife from disturbance associated with the darting activity. These impacts would be temporary and none would persist beyond a few hours of the darting procedure. No impact to avian species would be expected.

During field activities, the decision to dart a horse would ultimately rest with the designated darter. The accessibility of the horse at a particular point in time and location would trigger the decision-making process. The gun would remain unloaded until the horse has been selected and it is safe to proceed. The presence of wildlife in the vicinity would also be taken into consideration. The Dan Inject dart-gun would not be used at ranges in excess of 30 meters. No attempts would be made when wildlife are lingering within a 30 m radius of the target animal. No attempts would be made in high wind.

**7) Waste, Hazardous or Solid:** Syringes, darts, needles, vaccine containers, etc. used in the administration of the immunocontraceptive vaccine are considered regulated medical waste. Regulated medical waste must be placed in leak proof containers that are contained in a red plastic bag labelled medical waste. Medical waste must be handled and transported separately from other waste to an approved disposal facility. The amount of regulated waste that would be generated by the proposed action would be minimal and not result in any threat to the environment.

**VI. CONSULTATION AND COORDINATION:** Through the process of public scoping for the Pryor Mountain Wild Horse Range Herd Plan Revision, which has included two public meetings as well as the submission and summary of significant written comments, BLM has received and reviewed input regarding herd genetic viability as well as population control techniques. Several mailings went out to the public during this period in order to seek additional input on several other issues being considered in the plan revision. All relevant input was considered in the development of this EA.

Previous and on-going extensive research on wild horse fertility control has also been considered. Results of several research studies on Pryor wild horse population demographics, genetics and viability were given detailed consideration. Results of the NRCS Pryor Mountain Wild Horse Range Survey and Assessment (received in May 2004), which demonstrate that cumulative impacts (including weather, drought and grazing) have resulted in depressed rangeland health, have been given serious consideration in the development of this EA.

It is significant that the above studies have involved cooperative efforts with state and federal

agencies as well as multiple academic institutions. Notification of results of all previous research and studies, as well as the current EA, have been mailed to a Pryor Mountain mailing distribution list totaling over 500 individuals and groups (Appendix 5).

**A. List Of Preparers:**

Linda Coates-Markle, Wild Horse and Burro Specialist, Montana/Dakotas.

**B. Individuals, Groups and Agencies Consulted:** A letter with notification about the availability of the Fertility Control EA has been distributed to members of the general public, special interest groups, intra- and interagency personnel, and researchers at several different institutions (see Appendix 5) for review and comment. A press release was issued in the local and state media informing the public that the Fertility Control EA has been prepared and is available for review. Copies of the EA are available at the Billings Field Office, BLM, P.O.Box 36800, Billings, MT, 59107 or by calling 406-896-5013. Comments to the EA may be submitted to the same address.

**VII. FONSI:** The environment assessment, analyzing the environmental effects of the proposed action, has been reviewed. With the implementation of the attached mitigation measures, there is a finding of no significant impact on the human environment and an environmental impact statement (EIS) is not required. Implementation of the proposed action will not result in unnecessary or undue degradation of the public lands. In addition, the proposed action is in conformance with the appropriate and approved land use and herd management plans.

**SIGNATURE OF PREPARER:** \_\_\_\_\_

**Date Signed:** \_\_\_\_\_

**SIGNATURE OF ENVIRONMENTAL REVIEWER:** \_\_\_\_\_

**Date Signed:** \_\_\_\_\_

**SIGNATURE OF AUTHORIZED OFFICIAL:** \_\_\_\_\_

**Date Signed:** \_\_\_\_\_

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