

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

ENVIRONMENTAL ASSESSMENT

PRYOR MOUNTAIN WILD HORSE RANGE

**FY2002: HUMANE-USE OF FERTILITY CONTROL ON
SELECT YOUNG WILD HORSE MARES**

Under Direction of the BLM National Research Field Trials
on Wild Horse Fertility Control
Summer 2002

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I. INTRODUCTION

With passage of the Wild Horse and Burro 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”. From the 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.

Throughout this period, BLM experience has grown, and the knowledge of the effects of current and past management on wild horses and burros has increased. Long-term research efforts have resulted in viable alternatives to removal-only procedures in controlling herd size. Program goals have expanded beyond simply establishing “thriving natural ecological balance” (setting appropriate management levels) for individual herds, to include achieving and maintaining genetically-viable and self-sustaining populations of healthy animals.

The BLM is currently developing a long-term research strategy for the Wild Horse and Burro program. Within this strategy, continuation of research on fertility control has been identified as a high priority. The implementation of additional fertility control field trials, under a research protocol, has been recommended to commence in summer 2002. This plan will address the application of fertility control to select mares within 6-7 specific BLM herd management areas (HMAs) within the western states. A draft of this plan is expected to be ready for approval by the National Wild Horse and Burro Advisory Board by June 2002. Approval of this national-level field trial plan is required prior to implementation of the proposed action within this Environmental Assessment (EA).

The main goal of the 2001 PMWHR Gather was to reduce the herd to a size which would not negatively impact its genetic viability in the short term nor cause irreparable harm to the range. The last census activity (Appendix 1) indicates there are about 160 horses (which includes twenty-seven 2001 foals), on the range. The initiation of fertility control treatment in the Pryors, from the standpoint of humane-use, also began with the 2001 Gather. During this activity 5 yearlings and 1 two-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 giving these mares an opportunity to fully mature before becoming pregnant. Based on Fall 2001 herd pregnancy results (Appendix 2), and the degree of difficulty in accessing the herd in February/March, a decision was made to delay follow-up boosters and additional primers until summer 2002. The BLM is therefore required to prepare a separate EA for public review and comments prior to proceeding with these efforts.

This document outlines relevant information about the Pryor Mountain wild horse herd and presents alternatives for the application of additional fertility control within the herd. 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).

Public comments to the EA, must be submitted in writing and received by the Billings Field Office within a 30-day comment period determined by date of mailing of the document. The proposed fertility control implementation is scheduled to begin no earlier than July 15, 2002 and may continue through September 30, 2002. Any subsequent fertility control efforts, involving animals not identified in this EA, will be covered by additional NEPA documents.

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 (Appendices 3, 4). 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 38,000 acres and includes BLM, National Park Service (Bighorn Canyon/Dryhead), 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 fences 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, however, 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, especially mid to late summer, horse distribution seems to be restricted to the upper elevations within easy access of forage and nearby water reservoirs. The attached maps (Appendices 3 and 4), show the location of the range, its boundaries and three geographical areas: Burnt Timber Ridge (14,050 acres); Sykes Ridge (14,200 acres); and the Dryhead (8400 acres); which serve as home range areas for three separate, but not genetically distinct, subpopulations of the wild horse herd.

B. POPULATION DEMOGRAPHICS and GENETIC VIABILITY:

Specific details regarding the appropriate management level (AML) for the herd, colonial Spanish phenotype, population color balance, demographics, genetics viability, and reproductive fitness were addressed within the EA and Gather Plan for the FY2001 PMWHR Gather and Selective Removal (MT-010-1-44). The reader is encouraged to review this document for additional herd descriptive information. Important information for consideration in the current EA is presented below.

Herd Census Activity: 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 (WHIMS) developed by BRD-USGS researchers (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. The composition of harems and dominant stallions is fluid in nature, and therefore this information is tracked on an on-going basis.

Current estimates place the population at 27 yearlings and 133 adults (Appendix 1- as of November 16, 2001). The impacts of winter (2001-2002) mortality and 2002 foal births on the herd census will be determined by field personnel and evaluated by management prior to the initiation of any proposed activity.

Herd Social Structure: According to available data (Hall, 1972; Garrott and Taylor, 1990) and recent research (Singer et al, 2000), the number of harems within the PMWHR changes due to population demographics and has increased from 18 to 31 since 1992. 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 rates of interchange of mares between harem stallions recorded for wild horse populations. Up to 50% of all mares have interchanged between harems annually for the last several years (Figure 1). Sometimes foals are abandoned or injured and subsequently die because of this activity (Figure 2). Furthermore, a high rate of interchange activity between harems appears to be the "norm" for yearling and especially two-year old mares. 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.

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), and currently is (Figure 3), the structure for the PMWHR herd. There is a slight tendency towards bimodality (some age groups under-represented) and it is possible that age selective management has contributed to this condition. Bimodality could present a problem if severe climate, or other extreme environmental factors, were to have a negative influence on foal production (or survival) during years when smaller numbers of horses comprise the reproductively-active age classes. As such, a more uniform age structure would provide the population with more resilience to these catastrophic events. The maximum age of horses on the range appears restricted, with limited numbers of horses older than 15-16 years. It is probable that environmental conditions such as severe winters have contributed to this pattern.

Mare Foaling Rates and Foal Survival: BLM data and on-going research efforts have characterized the population as having a moderate foaling rate of ~60%, with almost 80% of mares three years of age and older conceiving during the breeding season (Figure 4). Long-term trends in the number of foals born indicate an annual average of 26 ± 7 foals (Figure 5), primarily born during the months May-June (Figure 6). The actual foaling rate may be somewhat higher than this figure, as the incidence of early post-natal deaths may be higher than previously recorded. Mares aged 3-13 years appear to contribute to foal production (Figure 7). In general, there appears to be only limited conception by yearling fillies with foaling as two-year olds (under 10% of age class).

Historical foal survival has been about 90% with the annual rate of population increase averaging 17-18%. During more recent years (1996-2001), foal survival has been impacted (Figure 8) as much as 30% by mountain lion and black bear predation as well as mare interchange related foal injuries and foal abandonment. Since average herd foaling rates have appeared to drop by 10% over this same period, annual rates of population increase have dropped to about a 10% level. It is interesting to note the increase in conception by 2 year olds in 1999 and 2000 with increased numbers of 3 year old mares foaling in the next year (Figure 9). This may have been a population response to reduced foal survival in 1999 and 2000. Some of these mares and their foals died, and all mares initially were in poor physical condition due to the energy demands of gestation and lactation. Despite this concern, current estimates of herd foaling success are indicative of a healthy and productive wild horse population. The recent trend of decreasing foal survival continues to be monitored closely by the BLM.

Herd Natural Mortality: Data from earlier research studies (see 2001 Gather Plan) have been used to define patterns of natural mortality (due to predators, disease, 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 10), as well as age-class related survival estimated from tracking known individuals on the range. There appears to be relatively limited mortality across most age classes, with more deaths occurring among foals and yearlings as well as animals over 15 years of age. It also appears that some gender-specific deaths are more evident in young males, perhaps related to social aggression, and older females, perhaps related to energy investment in years of foal production.

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 inevitable loss of genetic variation could reduce long term adaptability and survivability of the herd, it is important to continue to regularly monitor herd diversity.

Of additional 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). However, 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. In addition, there are alternative management strategies 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 of maintaining 90% of existing diversity over the next 200 year period, then Gross (2000) has demonstrated that the herd size would need to be increased to levels far beyond that which the Pryor range could sustain (see 2001 Gather Plan). However, other alternatives do exist and any management action which serves to delay the age of first reproduction for mares, by removing or contracepting young mares, will reduce the number of lifetime matings for those animals. This will act to reduce the total loss of genetic material from the herd due to random matings (genetic

drift), and serve to conserve genetic variation within the herd over time.

III. PROPOSED MANAGEMENT ACTION:

Humane-use of Fertility Control on Yearling and Two-year Old Mares

A. PURPOSE: In support of humane management and compassionate use of fertility control, BLM is recommending that all 15 yearling and 7 two-year old mares within the Pryor herd receive a primer and booster dose of immunocontraceptive Porcine Zona Pellucida (PZP) vaccine. The vaccine would induce one year of infertility, allowing the mares to mature in a healthier condition, before becoming pregnant and producing and supporting a foal. Contracepting younger mares also affords advantages to herd genetic diversity and this has been researched and evaluated for the Pryor herd (Gross, 2000). Individual contracepted mares would have their genetic contributions delayed but not removed from the herd. Therefore, the Billings Field Manager proposes to apply fertility control to select wild horse mares, under a humane-use application, in order to achieve and maintain a healthy and genetically viable Pryor Mountain wild horse population.

B. NEED: In the last 6 years (1996-2001), BLM monitoring has shown that 5 two-year old mares and 26 three-year old mares have produced foals (Figure 7). Their contribution to annual production has averaged 1 foal per year from the two-year old age class, and ~4 foals per year from the three-year old mares (Figure 9). The largest annual contribution from three-year old mares was in 2000 and presumably in response to notably increased foal mortality the year before. In several cases, the energetic demands of gestation and/or lactation had deleterious impacts on these mares. Since 1996, several young mares (20% of the 2 year olds; 27% of the 3 year-olds; and 41% of the 4-year olds) have lost their foals. In 3 cases, both mare and foal died and 2 other young mares suffered serious injuries presumably during a prolonged or difficult labor. All of these young mares were in poor body condition post-foaling (1-2 condition factor, out of a possible 5), in stark contrast to young mares who were naturally delayed in foal production (Figure 11a and b). Several of these mares have taken 1-2 years to improve their condition. Four of these mares and one foal were removed from the range during scheduled gathers, for adoption purposes, due to concerns about survivability on the range.

C. OBJECTIVES: The objectives of the proposed action are to:

- 1) implement the humane-use of a one year efficacy fertility control agent to 22 young mares on the PMWHR;
- 2) specifically provide a fertility control booster to 5 two-year old mares (born in 2000) which were given a fertility control primer in September 2001 (Appendix 1);
- 3) specifically provide fertility control primers and boosters (at least one month apart) to 15 yearlings (born in 2001) and 2 two-year old mares (Appendix 1);
- 4) conduct safe, successful and minimally-intrusive remote-delivery of fertility control vaccine in the field (Appendix 5);
- 5) initiate monitoring using research protocol within the BLM National Wild Horse Fertility Control Field Trial program (see Section G): including impacts on herd foaling rates; foaling seasonality; herd genetic viability; and individual mare body condition, fitness and behavior.

Fertility control provided in the summer of 2002 would impact 2003 pregnancies only. Prevention of 2002 pregnancies would have required access to young mares in March or April 2002. It was determined that all selected mares would either need to be gathered and brought into Britton Springs in March for primer and/or booster shots, or the vaccine would need to be remotely-delivered in the field. Gather activities at this time of year might have a negative impact on mares heavy with foal. Remote access to mares in the field at this time of year might have been compromised by seasonal distribution patterns of the horses, weather and snowfall conditions.

D. 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 (Appendix 6). 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 (\$20 per dose), can be remotely administered in the field, and requires a single annual booster dose to confer infertility for one breeding season. Research has shown that contracepted mares clearly show improvements in body condition and may actually live longer (Turner and Kirkpatrick, in press). From a mare physiological standpoint, PZP contraception appears to be completely reversible (Kirkpatrick and Turner, in press), does not appear to cause out-of-season births (Kirkpatrick and Turner, in prep.), 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 (Appendix 6). Recent behavioral studies with the Assateague Island and Shackleford Banks wild horses (Powell, 1999; Rogers, 2001), have shown that contracepted and uncontracepted 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).

E. 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 (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 5). These protocol shall serve as the Standard Operating Procedures (SOPs) for the 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 (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 National Park Service (NPS) portion, 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 responsible management agencies to dart on these non-BLM lands, as necessary.

F. 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) (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 (Appendix 10). BiFO, in its management of the PMWHR, is in full compliance with all pertaining criteria. The proposed action would also adhere to all guidance and research protocol set by the BLM National Wild Horse Fertility Control Field Trial program.

G. AUTHORITY for PROPOSED ACTION: The Wild Free-Roaming Horse and Burro 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, selected wild horse mares would be contracepted under a humane approach for a 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).

The BLM is currently developing a long-term research strategy for the Wild Horse and Burro program. Within this strategy, continuation of research on fertility control has been identified as a high priority. The implementation of additional fertility control field trials, under a research protocol, has been recommended to commence in summer 2002. The field trial plan will address the application of fertility control to select mares within 6-7 specific BLM herd management areas (HMAs) in the western states. A draft of this plan is expected to be ready for approval by the National Wild Horse and Burro Advisory Board by June 2002. Approval of this national-level field trial plan is required prior to implementation of the proposed action within this EA.

H. 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 this proposed action by supporting 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.

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

A. Humane-use of Fertility Control on Yearling Mares, Two-year Old Mares and Mares 15 Years of Age and Older:

Under this alternative, all yearling and two-year old mares, as well as those 15 years and older, currently on the range, would receive contraception. Humane fertility control would undoubtedly benefit these older mares, as it has been shown to do for older mares on Assateague Island National Seashore. This alternative was considered for the Pryor herd, but eliminated from further analysis, because of the limited numbers of mares 15 years and older on the range. Currently there are only 6 mares, 15 years of age and older (Figure 3), and Fall 2001 pregnancy data (Appendix 2) indicates that only one 16 year old may possibly foal in 2002. Since 1996, these older mares have had limited conception, and produced only six foals of which four survived (Figure 9). Generally foal production ceases by the 16th year (Figure 8) and most mares do not live much beyond this age. Management recommends further consideration of this alternative at a time when older mares may comprise a larger proportion of the herd.

B. Population Growth Control Use of Fertility Control on All Age Classes of Mares:

Under this alternative, all breeding-aged mares, currently on the range, would receive contraception. Mares would need to be gathered and brought into Britton Springs for primer and booster shots, or the vaccine could be remotely-delivered in the field. Research studies on east-coast barrier island populations indicate that, for population growth control purposes, at least 80% of all breeding aged mares must receive annual vaccine boosters for each year of expected infertility. This level of mare infertility would be required to achieve zero population growth.

This alternative was considered but eliminated from further analysis due to unacceptable impacts on the population at this time. At this time, it is not a PMWHR management goal to control population growth rates by fertility control. The intent of the proposed management action is humane-use of fertility control only. Management requires additional time to evaluate the impacts of predation on foal mortality prior to recommending the additional application of fertility control. One concern is that the impacts of predation on the foal crop may continue to increase and the combination of high-levels of contraception as well as natural foal deaths may result in the loss of whole age classes of horses from the herd. Missing age classes could potentially affect long-term population viability. Further analysis of Pryor mare behavior following fertility control, as well as the increasing impacts of predation and other natural mortality is needed prior to further consideration of this alternative.

C. No Action Alternative: No Use of Fertility Control on Any Age Class of Mares:

Under this alternative, no mares would receive fertility control for humane-use reasons. Neither PZP immunocontraceptive vaccine primers nor boosters would be given to any yearling or two-year old mares. These mares would be allowed to conceive naturally and potentially be subjected to the physiological constraints of foal production at an early age. A maximum of 22 mares would be affected with an average potential for 7-8 foals in 2004 (based on an average 50% herd foaling rate and 70% foal survival).

This alternative was considered but eliminated from further analysis because of unacceptable impacts on the future body condition and fitness of the 2002 yearling and two-year old mares. Given the probability that no more than 10% of the 15 yearlings may conceive in 2002 and produce a foal in 2003, fertility control would prevent these mares from conceiving again in 2003. This would allow at least a year of recovery following foal production in these young mares. The remaining 90% of the yearling age class would probably not become pregnant in 2002, and due to fertility control, conception would be delayed until 2004 when they are 3 years of age. This delay in conception would allow these mares the opportunity to fully mature before becoming pregnant and in all likelihood improve primiparous (first time foaling) mare and foal condition and survival.

Fall 2001 pregnancy data indicate that no two-year old mares are going to produce a foal in 2002 (Appendix 2). It is likely that up to 50% of this age class may conceive in 2002 and produce a foal in 2003 as 3 year olds. Fertility control in 2002 would not impact existing pregnancies, but would prevent conception in 2003. This would allow at least a year of recovery following foal production in these young mares. Within the remaining half of this age class then, fertility control in summer 2002 would delay pregnancy until 2004 (as 4 year olds). Once again, this delay in conception would allow these mares the opportunity to fully mature before becoming pregnant and in all likelihood improve primiparous mare and foal condition and survival.

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. A detailed description and discussion of these resource values can be found in the General Area, Population Description and Background Data section of the EA and Gather Plan for the FY2001 PMWHR Gather and Selective Removal (MT-010-1-44). The reader is encouraged to review this document for additional descriptive information. Important 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	

Wilderness Study Area	X		Sensitive, Threatened or Endangered Wildlife Species	X	
Water Quality (surface or ground water)	X		Fisheries Habitat	X	
Visual Resources Recreation, and Hunting	X		Areas of Critical Environmental Concern (ACECs)	X	
Climate and Air Quality	X		Wetlands and Riparian Areas	X	
Hazardous Waste	X		Livestock Grazing and Trailing	X	
Pryor Mountain Wild Horses	X		Vegetation	X	
Soils	X		Terrestrial Wildlife	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: Resources impacted by the proposed action: **Humane-use of Fertility Control on Yearling and Two-year Old Mares** 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 22 wild mares which may be successfully contracepted for one year only) with implementation of the proposed action.

1) Pryor Mountain Wild Horse Herd: All activity would be carried out according to current BLM 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. Recommended actions incorporate proven protocol or standard operating procedures (SOPs) which have been developed for remote-delivery techniques of fertility control vaccine. These SOPs (Appendix 5) represent the “best methods” for ensuring quality results, minimizing risks and reducing impacts associated with this activity. If conditions warrant, and animal health or welfare is in jeopardy at any time, remote-darting operations would be delayed or halted.

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. 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. The intensity of these impacts vary by individual, and are indicated by behaviors ranging from nervous agitation to physical distress. Mortality and/or permanent injury of individuals from this impact is unlikely. Injection site injury, such as abscesses, associated with fertility control treatments is extremely rare in treated mares (Appendix 11), but would be monitored on a regular basis under research protocol set by the BLM National Wild Horse Fertility Control Field Trial program.

In order to mitigate impacts of the proposed action, all vaccine would be controlled, handled and administered by a lead researcher in fertility control, Dr. Jay Kirkpatrick, ZooMontana, or a certified and experienced associate. Dr. Kirkpatrick has been responsible for the remote-delivery of PZP vaccine on various east-coast barrier island wild horse populations for over 14 years. In addition, knowledgeable and experienced BLM personnel would be on-site, during all phases of the operation. These BLM employees would be responsible for the accurate identification of individual selected mares. A contract veterinarian would be on-call, at all times during the operation. Possible veterinary emergencies have been discussed in detail within Appendix 5. 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 5).

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 (Appendix 6) 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 22 younger mares prior to or immediately following first-time foaling. Other potential physiological impacts of the PZP vaccine were discussed under the specifics of the proposed action. 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 BLM National Wild Horse Fertility Control Field Trial program. Behavioral data would be compared to existing baseline data and control studies on the Pryors (Figure 5; Feist, 1971; Anderson, 1998; Jenson, 2000; Harty, 2000; Meredith, 2001).

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.

Population-wide indirect impacts would not appear immediately as a tangible effect and are more difficult to quantify. Population-wide indirect impacts are associated primarily with use of fertility control drugs and reductions in short term fecundity of a small number of young mares. A maximum of 22 mares would be affected with an average potential for 7-8 foals in 2004 (based on an average 50% herd foaling rate and 70% foal survival). This effect of limited fertility control is not expected to have a significant impact on population dynamics or appropriate management level (AML), sex ratio or age structure of the herd. All available research indicates that delaying the age to first reproduction for younger mares would result in positive genetic benefits to the herd over time. No cumulative impacts to the long-term viability of the managed herd are expected with the proposed action.

2) Wilderness Study Areas (WSA): Three BLM wilderness study areas, containing approximately 23,000 acres, exist within the boundaries of the Pryor Mountain Wild Horse Range including Pryor Mountain, Burnt Timber Canyon and Bighorn Tack-On. In addition, sections of Lost Water Canyon (USFS) and Bighorn Canyon (NPS) are contained within horse range boundaries. Certain activities are restricted within these wilderness study areas including off-road vehicle use. Maps and information would be provided to all fertility control participants which clearly indicate wilderness boundaries and operative restrictions. Most horse access and darting activities are likely to happen on foot within reasonable hiking distances of wilderness roads. Designated roads are excluded from WSA status. Any impacts would therefore be considered as temporary disturbances and no irretrievable, irreversible, or cumulative impacts to any identified wilderness values are anticipated with implementation of the proposed action.

3) Visual Resources, Public Recreation and Hunting: In an effort to ensure the safety and welfare of all persons during the darting period, management would notify the public of intended activity via posted signs at the entrance points to the range and through the provision of handouts by participants explaining on-going activity to public visitors. Mitigation measures would include early and repeated notification to the public regarding proposed activities and timing, as well as close inter-agency co-ordination during the proposed darting period.

Fertility control efforts on the Bighorn Canyon National Recreation Area "Dryhead" would be co-ordinated through the NPS and information shall be made available to the public at the NPS Visitors Center, Lovell, Wyoming. No impacts are expected with "livestock trailing" activities on the Dryhead area as completion of fertility control darting is expected prior to Fall trailing activities. Completion of the darting activity by the end of September should mitigate, if not eliminate, most conflicts with mule deer, black bear and bighorn sheep hunters on the PMWHR.

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. Safety, for both humans and the horse is the foremost consideration in deciding to dart a mare. The gun would remain unloaded until the horse has been selected and it is safe to proceed. The Dan Inject dart-gun would not be used at ranges in excess of 30 meters. No attempts would be made when other persons are within a 30 m radius of the target animal, and when other persons are within a 90N angle defined by a line from the darter to the horse. No attempts would be made in high wind.

Also, in an effort to facilitate anticipated media and public interest and attention towards the darting activity, management would hold "public and media notification" periods at Britton Springs Administrative Site, at the base of the PMWHR, in order to provide opportunities for information sharing as well as co-ordinating field viewing opportunities of darting activities. Information on the timing of these activities would be made available by calling the Billings Field Office.

4) Areas of Critical Environmental Concern (ACEC): The East Pryor Mountains (including the PMWHR) were designated 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. In addition, the results of several research studies on Pryor wild horse population genetics and viability were given detailed consideration. It is significant that these studies involved co-operative efforts with state and federal agencies and academic institutions. Results of previous research efforts as well as the current PMWHR Fertility Control EA have been mailed to a Pryor Mountain mailing distribution list totaling over 400 individuals and groups (Appendix 12).

A. List Of Preparers:

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

B. Individuals, Groups and Agencies Consulted: This EA and Gather Plan have been distributed to members of the general public, special interest groups, intra- and interagency personnel, and researchers at several different institutions (see Appendix 12) for review and comment. A press release was issued in the local and state media informing the public that the Fertility Control EA had 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 or by calling 406-896-5013.

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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