

(Draft – For Internal Use Only)

**Bureau of Land Management
Wild Horse and Burro Program**

Alternative Management Options

October 2008

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BLM Wild Horse and Burro Program
Alternative Management Options**

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Executive Summary

BLM has completed an analysis of a number of possible short and long term options to reduce the number of wild horses removed from the range or held in short and long-term holding facilities. A summary of the options considered and the expected impacts follow.

Euthanasia of Animals for Which an Adoption or Sale Demand Does Not Exist

Summary:

- The intermediate and long-term challenge of supply exceeding demand would be addressed by implementing an ongoing policy that allows for the humane destruction (euthanasia) of wild horses and burros for which an adoption or sale demand does not exist.
- Implementation would begin using existing infrastructure in small numbers over time across the entire program, not thousands of horses over a short period of time.
- Euthanasia would be completed using practices approved by the American Veterinary Medical Association (AVMA).
- Carcass disposal would be in accordance with applicable Federal, State and local laws.

Outcomes:

- Likely outcomes are public controversy, litigation, and security threats at most facilities.
- Threats directed towards specific individuals within the program may also result.
- This option would address the challenge of animals for which an adoption or sale demand does not exist, allowing BLM to re-focus on the goals of achieving healthy wild horses, burros and rangelands now and into the future.

Timeframe/Costs:

- The proposed policy change could be implemented by January 1, 2009. However, contracting the services necessary to euthanize and dispose of a large number of animals at some locations could take an additional 6-12 months.
- A regulation change may be necessary before a contract could be issued for carcass disposal.
- Expected costs range from \$50-250 per head, but could exceed \$500 per animal in direct contract costs for large scale efforts.
- Savings would average \$3.50 per head per day that animals are not held in STH and \$1.30 per head per day in LTH. Millions of dollars in potential savings would result over the short and long term.

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Sale of Animals Unsuccessfully Offered for Adoption Three Times
(Three Strikes Sale Authority)

Summary:

- A change in policy would broaden the Bureau's current definition of sale-eligible animals under age 11 and increase the number of younger animals available for sale to good homes in the United States as well as other countries.
- Under the policy change, horses and burros would accumulate a "strike" after an adoption event and/or after each 30 day period at facilities open to the public by walkup or by appointment.
- Under BLM's present policy, wild horses and burros become eligible for sale only after they have been offered at three satellite or internet adoption events (i.e. three strikes).
- The current Bill of Sale with the intent clause that restricts a person's ability to resell, trade or give away the animals for processing into commercial products would continue to be used.

Outcomes:

- The policy change could make as many as 8,000 wild horses and burros under age 11 available for sale at short term holding facilities (STH) by March 31, 2009.
- The opportunity to buy a younger, healthy animal has potential to reach a segment of the general public that would like the flexibility to obtain immediate ownership (i.e. without a one year waiting period) or to sell their wild horse or burro at any time if their situation changes.
- As many as 2-15% of wild horses currently held in STH facilities could be placed in good homes in the next year through sales.
- Given the current economic climate and an industry-wide downturn in the horse market, the actual number of wild horses and burros sold could be very low.
- Some individuals may elect to wait for three strikes to accumulate so animals could be acquired through sale rather than adoption. This could further reduce adoption demand for wild horses.

Timeframe/Costs:

- No additional cost or legal or regulatory change would be needed to implement the proposed policy change.
- Implementation could begin January 1, 2009.
- An estimated savings of \$990,000 in STH costs could be realized by selling about 2,300 of the 8,000 animals in Fiscal Year (FY) 2009. An estimated savings of \$2.8 million could be realized in FY2010.

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Sale without Limitation (Horses 11 years of Age and Older)

Summary:

- A change in policy would allow for the sale of wild horses or burros age 11 years and older *without limitation* placed on the buyer.
- The current policy restricts what a buyer may do with a wild horse or burro after purchase.

Outcomes:

- The policy change could make as many as 12,000 sale-eligible wild horses age 11 years and older available for sale *without limitation* to buyers within the United States as well as other countries.
- The current Bill of Sale with the intent clause that restricts the buyer's ability to resell, trade or give away the animals for processing into commercial products would not be used.
- The policy change has potential to reach a segment of the general public who would like to obtain immediate ownership and the flexibility to sell their wild horse or burro at any time if their situation changes.
- By selling wild horses 11 years of age and older without limitation, the number of animals sold could increase to 50-75% of those eligible for sale. Given the current economic climate and an industry-wide downturn in the horse market, the actual number of wild horses and burros sold could be lower than anticipated.
- Millions of dollars in program costs could potentially be saved. The resulting cost-savings could be used to improve management of wild horses and burros on the range.
- Some members of the public may prefer this option over euthanizing healthy wild horses and burros for which an adoption demand does not exist. Others will be adamantly opposed because some of these wild horses would go to slaughter.

Timeframe/Costs:

- Implementation could begin January 1, 2009.
- It would cost about \$200 per animal to gather older, sale-eligible horses from LTH.
- Potential savings in FY2009 from sales of older wild horses and burros in STH range from \$180,000 to \$270,000. Potential savings in FY2009 from sales of older wild horses and burros in LTH range from \$1.4-\$1.8 million.
- A savings of \$12,000 over 20 years could result for every animal sold (\$130 million over their lifetime).

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Sale without Limitation, All Ages

Summary:

- A change in policy would allow for the sale of wild horses or burros of any age *without limitation* placed on the buyer. This has the potential to reduce the number of animals currently in STH and LTH and to significantly reduce program costs.
- The changes in the sale authority policy discussed here would allow all horses 11 years and older, or younger animals that have been offered unsuccessfully for adoption at least 3 times (3 “strikes”), to be sold without limitation. Younger horses and burros would accumulate a “strike” after an adoption event and/or after each 30 day period at facilities open to the public by walkup or by appointment.

Outcomes:

The policy change could make as many as 12,000 wild horses and burros (11 years of age and older) in LTH and another 8,000 (age 10 and less) available for sale *without limitation* to buyers within the United States as well as other countries.

- The current Bill of Sale with the intent clause that restricts the buyer’s ability to resell, trade or give away the animals for processing into commercial products would not be used.
- The policy change has potential to reach a segment of the general public who would like to obtain immediate ownership and the flexibility to sell their wild horse or burro at any time if their situation changes.
- With this policy change, the number of animals sold could increase to 50% - 75% of those eligible for sale. Given the current economic climate and an industry-wide downturn in the horse market, the actual number of wild horses and burros sold could be lower than anticipated.
- Millions of dollars in program costs could potentially be saved. The resulting cost-savings could be used to increase management of wild horses and burros on the range.
- Some members of the public may prefer this option over euthanizing healthy wild horses and burros for which an adoption demand does not exist. Others will be adamantly opposed because some of these wild horses would go to slaughter.

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Timeframe/Costs:

- Implementation could begin January 1, 2009.
- The majority of younger wild horses eligible for sale during the spring 2009 are in STH. Little or no cost would be associated with selling these animals.
- Potential savings in FY2009 from sales of wild horses and burros in STH range from \$2.5 to \$3.7 million.
- The cost to gather older, sale-eligible horses and burros from LTH would be about \$200 per animal.
- Potential savings in FY2009 from sales of older wild horses and burros in LTH range from \$200,000 to \$300,000.

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Adjusting Sex Ratios to Favor Males

Summary:

- Increasing the proportion of males relative to females in wild horse populations has potential to slow population growth by decreasing the number of mares on the range. This, in turn, would reduce the number of foals born each year.
- Use of fertility control in addition to sex ratio adjustments could further extend the time between maintenance gathers and result in reduced program costs for over the long-term.
- Sex ratio adjustments less than 70/30 males/females may not have a substantial effect on population growth rates.

Outcomes:

- Rather than being placed in LTH, a greater number of studs or geldings would be returned to their home HMA. They would re-adjust quickly as they are already familiar with their natural environment.
- The size of the breeding population would be decreased without decreasing the total herd size.
- Geldings may result in less stress to the herd's social structure than studs.
- The behavioral impacts associated with sex ratio adjustments are unknown. Increased competition between studs and geldings with mares and foals for limited water or forage resources could result.
- Increased monitoring of individual animal and herd behavior would be needed to assess impacts to the herd's social structure. This could be done before implementation on a broad scale so that future actions could be adjusted accordingly.

Timeframe/Costs:

- Implementation could begin following site-specific environmental analysis (NEPA) for gather planning/herd management area plan adjustment. Appeals or litigation could extend this timeframe.
- If stallions are returned to the range in greater numbers, there would be no additional costs as they would be released directly from the trap site or temporary holding facility.
- The estimated cost to geld studs in the field would be about \$100 per animal.
- There would be additional transportation and labor costs if studs were transported to BLM facilities for gelding. There would also be potential to spread infectious disease into the wild herd when geldings are released back to the range.
- If applied in conjunction with sex ratio adjustment, the cost of fertility control would be approximately \$205 per head for the 22-month fertility control product.

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Non-Reproducing Herds on HMAs and HAs

Summary:

- One option for reducing the numbers of wild horses or burros in short- or long-term holding (LTH) facilities would be to establish non-reproducing herds (sterile animals) in some existing herd management areas (HMAs) or herd areas (HAs).
- While some HAs may not have habitat sufficient to sustain breeding animals in a healthy condition over the long-term, they could potentially sustain small numbers of non-breeding animals.
- To implement this option, complete gather and removal of all animals in selected areas would be conducted to the extent possible. Animals would be returned to the area after they were sterilized.

Outcomes:

- Opportunity exists to provide LTH on-the-range for an additional 2000-3000 horses in the ten western states.
- From a practical perspective, it would be difficult to gather every animal off most HMAs. A totally non-reproducing herd may have to be established over a long period of time at very high cost.
- Public controversy would be expected as some may believe converting populations to non-reproducing herds is an attempt to eliminate wild horses. Others may feel each herd is a unique genetic resource and needs to be preserved although genetic analysis of most BLM herds indicates most are not unique.
- Legal challenges can be expected and could take several years to resolve.
- While each non-reproducing HMA/HA could delay the need for a new LTH facility, within a year or two, additional space would be needed.

Timeframe/Costs:

- An estimated 1-2 years would be needed to complete the necessary Land Use Plan Amendments.
- An additional 6-12 months would be needed to complete the necessary site-specific environmental analysis (NEPA).
- The cost to implement a complete gather could average \$1,000 per head.
- Gelding, then releasing studs in the field would cost about \$100 while sterilizing mares (spaying) could average \$300.

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Multiple Alternative Management Action Plan
(For a Hypothetical Herd Management Area)

Summary:

- ❑ This option would implement a number of alternative actions to manage an individual herd. In combination, the selected management actions would reduce gather frequency. This would result in fewer animals removed and placed into short- or long-term holding facilities.
- ❑ Actions considered include removal, adoption, sale, fertility control, sterilization and the return of all unadopted and unsold animals to the range.
- ❑ A hypothetical HMA is used as an example of how this alternative management action plan could be implemented. Appropriate Management Level (AML) for this HMA is 175-250 animals. The estimated population of 425 animals includes the current year's foal crop. The HMA is isolated and does not have movement in and out of the herd. An example of how alternative management actions could be implemented follows:
 - Wild horses would be removed to the low end of AML (175).
 - This would require removal of 250 head from the current population.
 - The animals removed would be offered for adoption or sale.
 - Upon completion of the adoption and sale period, any remaining animals not adopted or sold would be sterilized (gelded or spayed) or receive fertility control (mares) and returned to the HMA.
 - Holding times and sterilization procedures would vary depending on the sex distribution of the animals adopted and those being returned to the herd.

Outcomes:

- ❑ Removed animals not adopted or sold would be returned to the range rather than entering short- or long-term holding.
- ❑ A component of the HMA would be non-reproductive, resulting in reduced population growth.
- ❑ Depending on the time of year and pregnancy status of the mares removed, it could be 6 months or more before they would be candidates for spaying. Spaying mares could result in death loss of 10% or more.
- ❑ Returning the animals to the range following sterilization after a few months in STH facilities has potential to spread infectious disease to the wild herd.
- ❑ Litigation could result if adoptions and/or sales were not successful and animals needed to be returned in numbers above the high-end of AML.

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Timeframe/Costs:

- Land use plan amendments would take 2-3 years to complete. Site-specific environmental analysis (NEPA) could be completed in the 6-12 months following completion of LUP amendments. Appeals or litigation could extend this timeframe to several years.
- Following a gather, it could take up to 6 months to adopt or sell the animals removed.
- It could take another 4-6 months to sterilize the remaining animals and return them to the range.
- Removal operations would cost \$500-\$600 per head. The cost of meeting NEPA requirements would vary.
- Adoptions and sales could result in additional costs of \$500-\$1000 per horse depending on the level of advertising and adoption setup costs.
- Gelding and spaying procedures would cost approximately \$100-\$300 per head.

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Buyouts of Permits/Entering Into Agreements with Livestock
Permittees to Use Their Grazing Permits

Summary:

- One alternative to placing additional horses in long term holding (LTH) could include returning non-reproducing horses to the range utilizing existing livestock grazing permits.
- This could be done by leasing existing livestock grazing permits or purchasing base properties with attached grazing permits and converting cattle (or sheep) AUMs to horse AUMs for use by BLM or qualified third parties.

Outcomes:

- Converting livestock permits to wild horse use would allow BLM to maintain wild free-roaming animals in their natural environment and reduce the number of wild horses in contracted LTH facilities.
- Under the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA), BLM is not authorized “to relocate wild free-roaming horses and burros to areas of the public lands where they do not exist.” However, a solicitor’s interpretation concludes BLM is not prohibited from moving excess wild horses to LTH areas on public lands because no case law implies such a prohibition.
- Should BLM elect to move excess horses to LTH areas on public lands, appeals or litigation would be likely and could take years to resolve.

Timeframe/Costs:

- The needed regulatory change would take approximately 2-3 years to complete.
- It could take up to 5 years to acquire (purchase) suitable base properties and associated permits.
- Another 1-5 years would be needed to complete the necessary site-specific environmental analysis (NEPA) and Land Use Plan Amendments. Appeals or litigation would extend this timeframe.
- Large allotments would be needed to hold substantial numbers of wild horses due to the low productivity of most public rangelands. At an estimated carrying capacity of 20 acres per AUM, an allotment of 120,000 acres in size would be needed to hold just 500 horses year-long. In the absence of an adequate mix of spring-summer and fall-winter range, allotments would potentially need to be much larger.
- The total price to purchase a base property, water rights and associated grazing permit for 500 horses (6,000 AUMs) could be \$625,000 or more.
- Most states do not issue year-long grazing permits; therefore, relatively few year-long permits would be available for possible purchase.
- Annual expenses could reach \$75,000 or more to manage/operate each base property/grazing permit. Included would be labor (one full-time federal employee or equivalent) to maintain fence, pump water, irrigate the base property, and inspect the animals.

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Increased Use of PZP Fertility Control

Summary:

- This option proposes increased use of PZP fertility control for reducing population growth rates in wild horse herds. Porcine zona pellucida (PZP) vaccine, the most promising of these agents, is currently being used by BLM in the field.
- Increased use of PZP could be accomplished in one of three ways: (1) conduct more frequent gathers (without removals) to apply PZP pellets (e.g., every two years) to achieve continuous suppression of population growth; (2) expand opportunities for remote delivery (darting) of the one year PZP agent; (3) require the use of selective removal at each gather *and* the use of PZP for every mare released.

Outcomes:

- Application of the 22 month agent every two years could achieve long-lasting and potentially continuous suppression of wild horse population growth. Efficacy rates of 94% infertility in Year 1, 82% in Year 2 and 68% in Year 3 have been reported for PZP-22. However, maximum effectiveness is not achieved unless mares are treated during a 3 to 4 month window prior to foaling.
- To effectively reduce population growth 70-90% of the breeding age mares must be treated. This means 80-100% of the actual population must be captured.
- Its use under an investigational exemption requires treated mares to be physically marked or clearly identified through the use of photographs to comply with FDA requirements; the products are technically challenging to mix and administer.
- Remote application is problematic at this time because it is very difficult to approach most wild horses and burros on western rangelands closely enough to allow darting. At present, a limited number of people are trained to administer the product by darting.
- Excess wild horses would still need to be removed from treated herds over time because PZP does not eliminate reproduction entirely.
- A longer acting three to four year agent is needed to significantly reduce herd growth rates and achieve meaningful cost savings.
- The use of fertility control has received mixed reaction from Wild Horse Interest groups.
- The application of fertility control to all mares in an HMA could threaten herd viability in the event of a catastrophic event.

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Timeframe/Costs:

- Increased use of PZP could begin in about 6 months (as soon as there is product available for use). Training a larger pool of applicators for mixing and remote delivery of the liquid agent could be done concurrently but would also take 3 to 6 months during the winter gather season.
- The most significant cost of using PZP is the time and money required to capture and treat each horse. These costs can range from \$500-1,000. The 2-year pelleted vaccine costs approximately \$200 per vaccination which includes the liquid primer dose and the pellets.
- To implement increased use of darting, there would be costs associated with training new darters (approximately \$2500 per person) plus equipment, vehicles, seasonal labor and travel costs.
- Use of PZP vaccination or darting would entail increased administrative costs for tracking and monitoring.
- Savings will not be realized or apparent until the next time the herd is gathered which would normally be 3 to 4 years later.

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Fertility Control for Stallions (Castration and Vasectomy)

Summary:

- One suggested approach for controlling population growth is to reduce fertility among male horses to prevent/reduce conception in mares.
- This approach assumes male horses retain enough male behavior following sterilization (through castration or vasectomy) to continue to hold harems of mares and prevent mares from being bred by other fertile stallions.

Outcomes:

- This technique is unlikely to significantly slow population growth rates because up to 40% of all mares may be bred by a stallion other than the dominant harem stallion.
- Over time, competing, fertile wild horse stallions would be expected to impregnate all mares on the range. The breeding (and foaling) season would also be extended.
- Vasectomy in stallions is not a standard technique used in veterinary practice or research. Vasectomy in horses is much more difficult compared with vasectomy in rams or bulls. The approach would require general anesthesia and expert technique developed through trial and error.
- When contraceptive approaches have been reviewed, both the National Research Council (1982) and an independent study that used simulation modeling (Garrott 1992) concluded that female-oriented contraceptive techniques would have a higher probability of success when applied on a management scale and only mare-directed approaches were chosen or recommended for further study. It is the general opinion shared by the National Research Council (1982), the National WH&B Research Advisory Committee and most scientists working in the field that controlling wild horse population growth by modifying stallion fertility has limited promise.

Timeframe/Costs:

- Vasectomies could be performed at a cost of about \$150-250 per head in temporary holding corrals during gather operations or at BLM facilities with horses returned to the range following recovery from surgery.
- When performed in the field, increased gather handling and holding costs would be about \$300 per head.
- Implementation could begin following site-specific environmental analysis (NEPA) for gather planning/herd management area plan adjustment. Appeals or litigation could extend this timeframe.

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Implement Research and Use of GonaCon™

Summary:

- Population management would incorporate the experimental use of Gonacon™ in mares to help reduce population growth rates.
- GonaCon™ is an experimental gonadotropin-releasing hormone (GnRH) immunocontraceptive vaccine developed for deer by scientists at the U.S. Department of Agriculture's (USDA) Wildlife Services' (WS) National Wildlife Research Center (NWRC).
- Research of the GnRH vaccine is ongoing in several states and countries involving a wide range of wildlife and feral species, including horses.
- Efficacy rates as high as 94% are reported for GonaCon™ in year one following treatment.
- Efficacy rates after the first year appear to be similar to or somewhat lower than the PZP-22 BLM currently uses.

Outcomes:

- GonaCon™ has the potential to reduce foaling rates for one year following treatment.
- If GonaCon™ was longer lasting or available to BLM for management use it would offer an alternative to PZP vaccines.

Timeframe/Costs:

- It may be several years before GonaCon™ is ready for field use on an experimental basis in wild horses and even longer before it is available for management use.
- The developer of GonaCon™ must first obtain the necessary documentation and approvals from the EPA to use the product outside of research trials like the Nevada estray horse trials.
- The estimated cost of the vaccine is \$20 per dose; another \$500 to \$1,000 would be needed to capture and mark each mare (similar to PZP-22).

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Spaying Mares (Ovariectomy)

Summary:

- To slow population growth, mares would be permanently sterilized by spaying (ovariectomy) then returned to the range as a component of the herd or as members of a non-reproductive herd.
- A veterinarian would perform the surgery.

Outcomes:

- Spaying mares would be a 100% effective form of fertility control.
- However, spaying mares is risky. Mortality rates would be considerably higher than those associated with gelding stallions.
- The mare's pregnancy status and foaling date would limit when surgery could be performed. Mares may need to be held for an extended period to accommodate this.

Timeframe/Costs:

- Approximately 6 months would be needed to implement changes in BLM's equipment, facilities, and animal handling procedures to assure the safety of the animals and personnel involved.
- Assessing the environmental impacts associated with spaying a substantial number of mares through the NEPA process would take 6-12 months or more, if appeals or lawsuits were filed.
- Another 3-5 years would be needed to monitor impacts to individual animal and herd behavior and evaluate the effectiveness of spaying mares as a tool to reduce population growth.
- Spaying at facilities could range in cost from \$100 to \$2,000 per mare depending on the specific surgical procedure used (flank, vaginal, or laparoscopic methods). It would also facilitate post-operative care.
- Another \$620 per mare in feed and other facility costs could be required.
- Performing surgery in the field has potential to reduce feed/facility costs and to minimize the risk for spreading infectious disease into the wild herd once spayed mares are released back to the range. However, gather/removal costs could increase by about \$100 per mare. Another \$2,000 per day (up to \$200,000 per year) in contract veterinary costs could result.

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Implement Research and Use of SpayVac™

Summary:

- Population management would incorporate the experimental use of SpayVac™ in mares to help reduce population growth.
- SpayVac™ is an experimental fertility control vaccine for mares using porcine zona pellucida (PZP) antigens microencapsulated with liposome technology. It is easy to handle and administer.
- A captive trial of estray horses in Nevada indicates it may be a more effective, longer lasting fertility control agent than conventional PZP.

Outcomes:

- A single vaccination of SpayVac™ could maintain a high level of contraception within wild mares for at least 4 years or could be permanent.
- Based on the Nevada estray horse trials (Killian *et al* in press 2008), SpayVac™ exhibits the ability to reduce population growth in wild horses. If it proves to be permanent, it may be a valuable tool for use on specific mares in non-reproducing herds.
- There is no SpayVac™ product currently available for use and no one is making it.
- SpayVac™ has not been approved by the EPA or FDA for investigational use.

Timeframe/Costs:

- Additional research on the duration and long term effects of SpayVac™ are needed. These research trials could begin shortly after vaccine production resumes.
- To date, there is no projected dosage cost for SpayVac™ as no inventory is available. Costs may be similar to the one-year PZP vaccine BLM is currently using (about \$200 per dose and an estimated \$500-1,000 to capture and mark treated mares).
- A study for the research and development of SpayVac™ would require approximately \$250,000 for captive trials over a five year period.
- SpayVac™ could be ready for experimental use in one to two years and for management use in free-roaming horse populations in approximately six years if the above issues are resolved.

Alternative Management Options

Euthanasia of Animals for which an Adoption or Sale Demand Does not Exist

Introduction:

This option would implement a policy that allows for the humane destruction (euthanasia) of wild horses or burros for which an adoption or sale demand does not exist. Euthanasia methods would be limited to those accepted by the American Veterinary Medical Association (AVMA). Guiding principles include use of the most painless and rapid method to minimize pain and distress. Options for disposal of carcasses are also discussed. However, the processing of carcasses for human consumption is not considered in this option.

The AVMA is not opposed to the euthanasia of unwanted animals or those unfit for adoption. The Humane Society of the United States (HSUS) also recognizes euthanasia of unwanted pets as a “necessary reality” within animal shelters. Today, in the domestic horse community, it is becoming very difficult to find rescue or shelter space for unwanted domestic horses. Euthanasia is increasingly being considered as an option for managing the problem of unwanted domestic horses.

Legal Authorities:

The 1971 Wild Free-Roaming Horses and Burros Act, as amended, states: “The Secretary shall cause additional excess wild free-roaming horses and burros for which an adoption demand by qualified individuals does not exist to be destroyed in the most humane and cost efficient manner possible.” The Code of Federal Regulations (CFR) reaffirms this directive in 43 CFR 4720.1 and 4730.1, which state: “Excess animals for which adoption demand does not exist shall be destroyed in the most humane and cost efficient manner possible.” From 1988 through 2004, the Federal Appropriations Act prohibited BLM’s use of appropriated funds to destroy healthy animals. This approach has not been reconsidered since that time.

With regard to carcass disposal, 43 CFR 4730.2 states: “Remains of wild horses or burros that die after capture shall be disposed of in accordance with State or local sanitation laws. No compensation of any kind shall be received by any agency or individual disposing of remains. The products of rendering are not considered remains.” This regulation may indicate paying for carcass disposal through rendering is acceptable, but paying for carcass disposal through burial, incineration, composting or other methods may not be acceptable. A regulation change may be necessary before a contract could be issued for carcass disposal.

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Assumptions:

- ❖ Only methods of euthanasia approved by the American Veterinary Medical Association (AVMA) and the BLM authorized officer would be used.
- ❖ Euthanasia would be performed by or under the direct supervision of the BLM authorized officer with a veterinary consultation as needed.
- ❖ Unadopted animals would include wild horses *and* burros.
- ❖ Guiding principles include minimizing pain and distress to the greatest extent possible by using the most rapid and painless euthanasia method.
- ❖ Carcass disposal will be in accordance with applicable Federal, State and local laws.
- ❖ The general public would be prohibited from viewing euthanasia.
- ❖ Current BLM policy regarding the euthanasia of animals for reasons related to health, handling and animal well-being would remain unchanged.

Description:

Criteria to be used to identify animals for euthanasia –

1. Excess horses and burros of advanced age regardless of condition.
2. Older, sale-eligible animals that have not been sold after 30 days.
3. Younger excess animals for which an adoption demand does not exist (“three-strikes”) which have been offered for sale for 30 days and have not been sold.

The determination that an adoption demand does not exist will be made after an animal has been available for adoption during three 30 day periods in an adoption facility and/or has been offered at three satellite or internet adoption events. These animals will be offered for sale for another 30 days before they are eligible for euthanasia.

When and where animals would be euthanized – Euthanasia could be performed on the range during gathers based on specific age criteria.

Euthanasia could also be incorporated into the BLM facility activities. Methods of euthanasia and disposal currently in use at most facilities could accommodate from about 1200 – 2000 animals per year. Animals identified for euthanasia at BLM facilities would be required to meet the above criteria.

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Implementation would likely begin using existing infrastructure to euthanize small numbers over time across the entire program. Euthanizing large numbers of animals or concentrating the procedure at any one facility would be avoided.

If large numbers of animals became eligible for euthanasia at one time or at one location, a different approach would be needed. Large scale efforts could be completed through contracting. The use of standard, approved euthanasia methods would be required under the contract. However, euthanasia could be performed either on- or off-site. Carcass disposal for large scale efforts would most likely be done through rendering contracts or use of air curtain incineration on- or off-site.

Under this option, any facility could become a focal point for public, media or Congressional attention. Increased levels of security would be needed at all locations, or the activity may need to be moved off-site to a more appropriate and secure facility. Increased support from public relations and management staff would also be needed to insulate those doing the actual work from public, media and Congressional scrutiny/criticism.

How euthanasia would be performed – The specific technique or techniques used would be determined by the veterinarian and BLM authorized officer. Euthanasia would be performed in accordance with AVMA Guidelines on Euthanasia. Under these guidelines, the most rapid and painless euthanasia method possible under the circumstances would be selected. In selecting a method, the safety and well being of the animals and personnel involved must also be considered. Methods used would comply with applicable federal, state, and local laws governing drug acquisition and storage, occupational safety, and animal disposal.

Three methods of euthanasia have been approved by the AVMA and the American Association of Equine Practitioners for use in horses: (1) overdose of a barbiturate anesthetic, (2) gunshot to the head of a calm, sedated or humanely restrained horse and (3) penetrating captive bolt to the head of a calm, sedated or humanely restrained horse.

At the present time, depending on the circumstances at hand, most facilities use either injection of a barbiturate overdose by a veterinarian or gunshot to the brain.

How carcass disposal would be performed – Carcass disposal is the biggest practical and technical challenge when considering the euthanasia of a large number of animals. Most facilities currently use a rendering service, burial at a local landfill, or burial on-site. There is not a strong infrastructure to support carcass disposal of larger numbers of animals at the facilities at this time. Additional planning

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could moderately expand the capacity for carcass disposal at some facilities. Other facilities would need to explore new options and new technologies to accommodate even a moderate increase in the number of animals euthanized. All facilities would need to expand their capacities if large numbers of animals were euthanized in a short period of time.

Techniques for animal disposal that offer the greatest potential for meeting BLM's needs could also include composting and air curtain incineration.

Pros:

- An ongoing policy that allows for the euthanasia of animals for which an adoption or sale demand does not exist would address the intermediate and long term challenge of supply exceeding demand indefinitely.
- A decrease in feed day cost for every animal that is euthanized.

Cons:

- Advocacy groups, the media, Congress, persons within the BLM and the general public are generally and most often vehemently opposed to the euthanasia of healthy unadopted or unsold wild horses and burros.
- Although program cost would be reduced over the long-term, implementation would incur additional costs, especially in the short-term.
- Euthanizing healthy animals creates emotional stress which can lead to compassion fatigue for those involved in the process.
- Implementation of a euthanasia policy for unwanted animals would be controversial and could be expected to result in litigation. Legal action could have potential to stay all program activities for a period of time.
- There would be an increased security threat for most facilities, and this could include threats directed toward specific individuals within the program.

Timeframe:

A new policy for the euthanasia of animals for which an adoption or sale demand does not exist could be developed and issued by January 1, 2009. A moderate increase in the number of animals euthanized across all facilities could begin soon after this date. A plan for the large scale euthanasia and disposal of a large number of animals in a few selected locations would require 6-12 months additional time for contracting. If regulations need to be changed to allow compensation to contractors for disposal of remains, it could take up to 2-3 more years.

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Cost:

Estimated cost for euthanasia and disposal at BLM facilities is \$50-250 per animal. Direct contract costs for larger scale efforts could be \$500 or more per animal. The total estimated cost to euthanize a minimum of 1,200 horses in Fiscal Year (FY) 2009 at an average cost of \$125 per animal would be about \$150,000.

Benefit:

The net savings of euthanizing 1,200 animals in FY2009 would be just over \$600,000. This includes an average savings of 180 feed days cost at \$3.50 per day (\$756,000) less expense (-\$150,000).

The euthanasia of animals for which an adoption or sale demand does not exist would address the challenge of unadopted animals in the program quickly and indefinitely. The savings generated could be used to re-focus on improving management of wild horses and burros on the range and allow BLM to make significant progress toward achieving the goals of healthy wild horses, burros and rangelands. Over the longer-term, no LTH facilities would be needed if euthanasia was implemented in balance with the number of unadopted or unsold animals on an ongoing basis.

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**Sale of Animals Unsuccessfully Offered for Adoption Three Times
(Three Strikes Sale Authority)**

Introduction:

Excess wild horses and burros that have been unsuccessfully offered for adoption at least three times are eligible for sale. The current policy defines “offered for adoption” as having been presented for adoption at specific satellite and internet events. Modification of this policy to redefine “offered for adoption” as described below could increase the number of younger animals for sale to good homes.

Legal Authorities:

The sale of younger wild horses and burros will follow Section 3 of Public Law 92-195 (16 U.S.C. 1333) as amended: “(B) ...the excess animal has been offered unsuccessfully for adoption at least 3 times” ... “(4) EFFECT OF SALE. Any excess animal sold under this provision shall no longer be considered to be a wild free-roaming horse or burro for purposes of this Act.”

Assumptions:

- ❖ Before wild horses or burros would be made available for adoption, they would be vaccinated, freeze marked, aged and tested for Equine Infectious Anemia (Coggins).
- ❖ All sales of wild horses and burros would be completed by authorized BLM personnel located at BLM-managed facilities, and not at any public stockyard or sales barn.
- ❖ Large sales would be completed by the National Point of Contact.
- ❖ The current Bill of Sale with the intent clause that restricts a person’s ability to resell, trade or give away the animals for processing into commercial products would continue to be used.

Description:

The present policy allows wild horses and burros to become eligible for sale only after they have been to three satellite or internet adoptions (i.e. three strikes). However, due to reduced adoption demand, large numbers of younger wild horses are being maintained in short-term holding (STH) facilities for an extended period of time. Many are held until they become qualified to be placed in long term holding (LTH) facilities. Caring for these wild horses for such a long period of time is costing the program millions of dollars. The proposed change in policy would broaden the Bureau’s current definition of sale-eligible animals under age 11, consistent with the legal authority referenced above. Horses and burros would accumulate a “strike” after an adoption event and/or after each 30 day period at a facility open to the public by walkup or by appointment.

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This option has potential to reach the segment of the general public that does not want all of the stipulations BLM places on adoptions of wild horses and burros with younger animals. These individuals would like the flexibility to sell their wild horse or burro at any time if their situation changes rather than waiting for one full year to obtain title to the animal. There appears to be some demand to buy healthy and younger wild horses and burros in the United States as well as in other countries. Under the present policy it is difficult to place younger horses into good homes outside the United States.

Satellite adoptions cost the program approximately \$900 per horse per event. The wild horses also stay at (STH) facilities for a minimum of 2 weeks, if not longer, at an estimated \$6.00 per head per day until they are presented at another satellite event. The feed day cost for each wild horse sent to three satellite adoptions and held 14 days between each event is \$3,000. Since the majority of horses stay in STH longer than 14 days due to event scheduling, this cost estimate is conservative.

At the present time the majority of wild horses in STH have not been available for adoption since they have not been presented at adoption events. Allowing these wild horses and burros to become eligible for sale at STH facilities without shipping to three different satellite adoption events would reduce transportation and handling stress. Some savings in transportation costs and the costs associated with presenting the animals at satellite adoption events would also result.

Pros:

- This option would allow wild horses and burros currently held in STH, but for which there is no adoption demand, to be placed in good homes through sale.
- More sale-eligible horses or burros, including younger animals, could be made available for sale to good homes in other countries.
- A policy change would be needed to implement this option.
- There would be no additional cost to implement the policy change.
- This option could potentially place 2-15% of the wild horses and burros currently held in STH facilities into good homes in the next year.

Cons:

- This option could further reduce adoption demand for wild horses and burros. Some potential adopters may elect to wait for three strikes to accumulate so the wild horses and burros would be eligible for sale rather than adoption.
- Tracking the amount of time each wild horse and burro spends at various facilities, or the number of times a specific horse or burro is offered for adoption at advertised events would be time consuming and cumbersome. There is currently no mechanism to do this in the National WH&B database.

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- ❑ Due to the current economic climate, and an industry-wide downturn in the horse market, the actual number of wild horses and burros sold could be very low.

Timeframe:

To implement this option, BLM would need to develop policy guidance for the field. Included would be drafting the proposed policy and making it available to the field for comment for a minimum of 30 days. Another 30-60 days would potentially be needed to finalize the policy. Given this timeline, policy implementation could begin January 1, 2009.

At the present time, an estimated 8,000 wild horses and burros under age 11 are being held at various short term holding facilities. Included are approximately 3,400 under the age of three years; 3,600 wild horses and burros under the age of six years; and 700 between 6-9 years old. The majority of these animals could become sale-eligible as of March 31, 2009 if the policy was implemented January 1, 2009.

Costs:

There would be no net increase in program cost by changing the three strikes criteria. There would be a shift in cost from adoptions to sales.

Cost Savings and Benefits:

The majority of horses eligible for sale during the spring of Fiscal Year (FY) 2009 would be located at STH facilities. Cost savings from satellite adoptions would not be realized during this timeframe, since relatively few adoption events are scheduled during the spring.

An estimated savings of \$990,000 in feed day costs would be realized in FY2009, as approximately 2,300 of the 8,000 wild horses are sold throughout the fiscal year. This estimate is based on an average cost of \$3.50 per head per feed day.

About 2-15% of the younger animals currently in STH could be sold to individuals who can provide good homes. If the program begins January 1, 2009, the initial percentage could be lower (i.e. about 2-5% beginning in the spring). This would potentially be followed by a steady increase during the summer months (i.e. about 5 to 15%) with reduced demand in late fall and winter.

Younger horses would be expected to be in greatest demand. Sales of 0-2 year old horses could range between 5-15% while sales of 3-5 year olds could range between 3-10% of those available. Demand for sales of horses between 6-10 years of age would be expected to be much lower, i.e. an estimated 2-5%.

For additional information relative to potential cost-savings, refer to Table 1:

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Table 1. Potential Cost-Savings (Three Strikes Sale Authority)

Age of horses & burros in STH	Number of horses & burros in STH	Potential Demand	Number sold in 1st Quarter of 2009	Number sold in 2nd quarter of 2009	Number sold in 3rd Quarter of 2009	Number sold in 4th quarter of 2009	Saving from 2009 sold animals in fiscal year 2010
0-2	3,400	2%	68	500	425	276	1269
3-5	3,600	5%	72	353	318	143	885
6-9	700	10%	14	34	13	13	74
		15%					
Total	7,700		154	887	755	432	2228

Cost savings at \$3.50 per day per head in STH			\$ 145,530	\$ 558,747	\$ 237,946	\$ 45,326	\$ 2,846,221
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Sale without Limitation (Horses 11 Years of Age and Older)

Introduction:

Excess wild horses and burros age 11 years and older are eligible for sale. The current policy restricts what a buyer may do with a wild horse or burro after purchase. Modification of this policy to allow for the sale of eligible wild horses and burros *without limitation* placed on the buyer would increase the number sold.

Legal Authorities:

The sale of wild horses and burros follows Section 3 of Public Law 92-195 (16 U.S.C. 1333), as amended: “(1) IN GENERAL.--Any excess animal or the remains of an excess animal shall be sold if — (A) the excess animal is more than 10 years of age; (B) the excess animal has been offered unsuccessfully for adoption at least 3 times (2) METHOD OF SALE.--An excess animal that meets either of the criteria in paragraph (1) shall be made available for sale without limitation, including through auction to the highest bidder, at local sale yards or other convenient livestock selling facilities, until such time as — (A) all excess animals offered for sale are sold; or (B) the appropriate management level, as determined by the Secretary, is attained in all areas occupied by wild free-roaming horses and burros. (4) EFFECT OF SALE.--Any excess animal sold under this provision shall no longer be considered to be a wild free-roaming horse or burro for purposes of this Act.”

Assumptions:

- ❖ Before wild horses or burros would be made available for sell, they would be vaccinated, aged, freeze marked and tested for Equine Infectious Anemia (Coggins).
- ❖ All sales of wild horses and burros would be completed by authorized BLM personnel located at the BLM-managed facilities, and/or public stockyards or sale barns.
- ❖ Large, negotiated sales would be coordinated by the National Point of Contact.
- ❖ The current Bill of Sale with the intent clause that restricts the buyer’s ability to resell, trade or give away the animals for processing into commercial products would not be used. All wild horses and burros would be sold *without limitation* on the sale.

Description:

This option would broaden the Bureau’s current definition of sale-eligible wild horses or burros consistent with the legal authority referenced above. With this policy change, the number of animals sold could increase to 50% - 75% of those eligible for sale.

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The intent clause would be removed from the current Bill of Sale. Sales could be conducted at sale barns or at other facilities, including BLM operated facilities that could accommodate the humane and safe handling of wild horses and burros.

This option has potential to reach the segment of the general public that does not want the stipulations BLM places on the sale of wild horses and burros under the current policy. These individuals want to buy animals without restrictions on their intended use following purchase. Many buyers would like the flexibility to sell their wild horses and burros at any time if their situation changes and they no longer want the animals.

With this policy change, the number of animals sold could potentially increase to 50 – 75% of those eligible for sale. Due to the current economic climate, and an industry-wide downturn in the horse market, the actual number of wild horses and burros sold could be lower than anticipated.

At this time there are about 12,000 wild horses and burros 10 years of age and older in short and long term holding (STH/LTH), and all are sale-eligible. Caring for these animals until they die of natural causes will cost the program about \$12,000 per animal over 20 years (nearly \$130 million over their lifetime). At this level of spending and under current budget scenarios, no funding would remain to properly manage wild horses and burros on the range.

A change in BLM policy consistent with the criteria below would be applicable for all sale-eligible wild horses or burros:

- Wild horses and burros become sale eligible after 10 years of age.
- Wild horses and burros STH would be advertised for sale. This could be accomplished through different marketing techniques.
- Wild horses and burros 11 years and older in STH would be offered for sale prior those in LTH. Once older wild horses and burros are sold from STH, horses 11 years and older from LTH would be available for sale without limitation.
- All transportation would be the responsibility of the buyer.

Pros:

- The sale of over half the eligible horses in the system could be possible and would reduce feed day costs substantially.
- Sales would not be limited to the continental U.S. Sale-eligible wild horses or burros could be made available for sale to anyone interested without limitation.
- There would no additional cost to implement this change in STH.
- The resulting cost-savings could be used to properly manage wild horses and burros on the range.

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- Some public may prefer this option over euthanizing healthy wild horses and burros for which an adoption demand does not exist.

Cons:

- If the intent clause is removed from the Bill of Sale, some of these wild horses would go to slaughter.
- There would be additional costs to the program when wild horses and burros are sold at sites other than BLM facilities.
- There would be additional cost to the program to gather and prepare wild horses at LTH facilities for sale.

Timeframe:

To implement this option, BLM would need to develop policy guidance for the field. Included would be drafting the proposed policy and making it available to the field for comment for a minimum of 30 days. Another 30-60 days would be needed to finalize the policy. With this schedule, policy implementation could begin January 1, 2009.

Cost:

There would be little/no cost associated with selling 11 year and older animals located in STH.

The cost to gather wild horses from LTH would be about \$200 per head. The cost includes labor to gather and identify each horse, and veterinary costs for health certificates and EIA (Coggins) testing. Costs could be higher if additional preparation or holding is needed.

Benefits and Cost Savings:

This policy change could significantly increase sales of excess wild horses and burros and could dramatically reduce holding costs throughout the program. The savings generated could be used to manage wild horses and burros on the range and allow BLM to achieve our goal for healthy animals and rangelands now and into the future.

Selling 50% of the 570 wild horses and burros 11 years and older located on STH would save the program an estimated \$180,000 for FY2009; selling 75% would save \$270,000 million.

Wild horses that are maintained in LTH cost \$200 per head to prepare them for sale. Selling 50% of the 12,000 wild horses and burros 11 years and older located on LTH would save the program an estimated \$200,000 for FY2009; selling 75% would save \$300,000. The savings to the program in FY2010 would be a range of between \$2.8 million and \$4.2 million.

The cost savings described above are based on an average STH cost of \$3.50/horse/day and a LTH cost of \$1.30/horse/day. Because sales would occur throughout the year, an average holding period of 180 days for each animal is assumed.

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For additional information about potential costs and savings, refer to Tables 2 and 3:

**Table 2. Potential Savings from Sales in STH
(Sale without Limitation, Age 11 Years and Older)**

50% of animals sold in STH over the FY 2009	STH savings 180 days @ 3.50 per day per head	75% of animals sold in STH over the FY 2009	STH savings 180 days @ 3.50 per day per head	STH 50% savings 365 days @ 3.50/day/head for out year 2010	STH 75% savings 365 days @ 3.50/day/head for out year 2010
290	\$ 182,700	430	\$ 270,900	\$ 370,475	549,325

**Table 3. Potential Costs and Savings to Prepare Animals in LTH for Sale
(Sale without Limitation, Age 11 Years and Older)**

\$200 cost for preparation of 50% in LTH	\$200 cost for preparation of 75% in LTH	LTH cost savings in FY 09 minus the prep cost on 50%	LTH cost savings in FY 09 minus the prep cost on 75%	Cost savings for the out year 2010 on 50% sold	Cost savings for the out year 2010 on 75% sold
\$ 1,200,000	\$ 1,800,000	\$ 204,000	\$ 306,000	\$ 2,847,000	\$ 4,270,500

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Sale without Limitation, All Ages

Introduction:

Excess wild horses and burros unsuccessfully offered for adoption at least three times or those over the age of 10 years are eligible for sale. The current policy restricts what a buyer may do with a wild horse or burro after purchase. It also defines “offered for adoption” as those animals presented at specific satellite and or internet adoption events. A change in policy to allow for the sale of eligible wild horses and burros *without limitation* placed on the buyer and to broaden the definition of “offered for adoption” would increase the number of animals sold to buyers within the United States as well as other countries. This has potential to reduce the number of animals currently in short term holding (STH) and long term holding (LTH) and to significantly reduce program costs.

Legal Authorities:

The sale of wild horses and burros follows Section 3 of Public Law 92-195 (16 U.S.C. 1333), as amended: “(1) IN GENERAL.--Any excess animal or the remains of an excess animal shall be sold if — (A) the excess animal is more than 10 years of age; (B) the excess animal has been offered unsuccessfully for adoption at least 3 times (2) METHOD OF SALE.--An excess animal that meets either of the criteria in paragraph (1) shall be made available for sale without limitation, including through auction to the highest bidder, at local sale yards or other convenient livestock selling facilities, until such time as — (A) all excess animals offered for sale are sold; or (B) the appropriate management level, as determined by the Secretary, is attained in all areas occupied by wild free-roaming horses and burros. (4) EFFECT OF SALE.--Any excess animal sold under this provision shall no longer be considered to be a wild free-roaming horse or burro for purposes of this Act.”

Assumptions:

- ❖ Before wild horses or burros would be made available for adoption, they would be vaccinated, aged, freeze marked and tested for Equine Infectious Anemia (Coggins).
- ❖ All sales of wild horses and burros would be completed by authorized BLM personnel located at BLM-managed facilities, and/or public stockyards or sale barns.
- ❖ Large, negotiated sales would be coordinated by the National Point of Contact.
- ❖ The current Bill of Sale with the intent clause that restricts the buyer’s ability to resell, trade or give away the animals for processing into commercial products would not be used. All wild horses and burros would be sold *without limitation* on the sale.

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Description:

This option would broaden the Bureau's current definition of sale-eligible wild horses or burros consistent with the legal authority referenced above. With this policy change, the number of animals sold could increase to 50% - 75% of those eligible for sale.

The changes in the sale authority policy discussed here would allow all horses 11 years and older or animals that have been offered unsuccessfully for adoption at least 3 times to be sold without limitation. Horses and burros would accumulate a "strike" after an adoption event and after each 30 day period at a facility open to the public by walkup or by appointment.

The intent clause would be removed from the current Bill of Sale. Sales could be conducted at sale barns or at other facilities, including BLM operated facilities that could accommodate the humane and safe handling of wild horses and burros.

This option has potential to reach the segment of the general public that does not want all of the stipulations BLM places on the sale of wild horses and burros under the current policy. These individuals want to buy animals without restrictions on their intended use following purchase. In addition, buyers want the flexibility to sell their wild horses and burros at any time if their situation changes and they no longer want the animals.

With this policy change the number of animals sold could potentially increase to 50 – 75% of those eligible for sale. Due to the current economic climate, and an industry-wide downturn in the horse market, the actual number of wild horses and burros sold could be lower than anticipated.

At this time there are about 12,000 wild horses and burros 10 years of age and older in short and long term holding (STH and LTH), and all are sale-eligible. Caring for these animals until they die of natural causes will cost the program about \$12,000 per animal over 20 years (nearly \$130 million over their lifetime). At this level of spending and under current budget scenarios, no funding would remain to properly manage wild horses and burros on the range. Another 9,000 animals are age six to nine and about 7,000 animals are 5 or less years of age. There is a reduced adoption demand for these animals and the cost of holding them over their lifetime would be even greater.

A change in BLM policy consistent with the criteria below would be applicable for all sale-eligible wild horses or burros:

- Wild horses and burros become sale-eligible after 10 years of age.
- Wild horses and burros that are in STH short term holding would be advertised for sale. This could be through different marketing techniques.

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- Wild horses and burros that are age 11 years and older that are and located in STH short term holding will would be offered for sale prior those in LTH long term holding.
- Once older wild horses and burros are sold from short term holding STH, horses that are 11 years and older from long term holding LTH will would be available for sale without limitation.
- All transportation will be the responsibility of the buyer.

Pros:

- This option would allow the sale of excess wild horses and burros of any age currently held in STH or LTH facilities and for which there is no adoption demand. Sale of over half the eligible horses in the system would potentially be possible. Feed day costs could be substantially reduced.
- Sales would not be limited to the continental U.S. Sale-eligible wild horses or burros could be made available for sale to anyone interested without limitation.
- There would no additional cost to implement this change in STH.
- The resulting cost-savings could be used to properly manage wild horses and burros on the range.
- Some public may prefer this option over euthanizing healthy wild horses and burros for which an adoption demand does not exist.

Cons:

- If the intent clause is removed from the Bill of Sale, some of these wild horses would go to slaughter.
- There would be additional costs to the program when wild horses and burros are sold at sites other than BLM facilities.
- There would be additional cost to the program to gather and prepare wild horses at LTH facilities for sale.

Timeframe:

To implement this option, BLM would need to develop policy guidance for the field. Included would be drafting the proposed policy and making it available to the field for comment for a minimum of 30 days. Another 30-60 days would be needed to finalize the policy. With this schedule, policy implementation could begin January 1, 2009.

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Cost:

The majority of younger wild horses which would be eligible for sale during the spring of FY2009 are in STH facilities. Little/no costs would be associated with selling these animals. The cost to gather wild horses from LTH would be about \$200 per head. Included is the labor to gather and identify each horse, the estimated cost also includes veterinary costs for health certificates and EIA (Coggins) testing. Costs could be higher if additional preparation or holding is needed.

Benefits and Cost Savings:

These changes in policy could increase the sale of excess horses and burros and could dramatically reduce holding costs. The savings generated could be used to improve management of wild horses and burros on the range and allow BLM to achieve our goal for healthy animals and rangelands now and into the future.

In FY2009, potential savings from the sale of about half (50%) of 8,000 wild horses and burros under the age of 11 years located in STH would be an estimated \$2.5 million; selling 75% would save \$3.7million.

Selling wild horses on LTH would cost about \$200 per head. Sale of about half (50%) the 12,000 wild horses and burros 11 years of age and older in LTH would result in a net savings of about \$200,000 in FY2009; selling 75% would save about \$300,000.

The cost savings described are based on an average STH cost of \$3.50/horse/day and a LTH cost of \$1.30/horse/day. An average holding period of 180 days for each animal was assumed because sales would occur throughout the year.

For additional information about potential costs and savings, refer to Tables 4 and 5:

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Table 4. Potential Savings (Sale without Limitation, Ages)

50% of animals sold in STH over the FY 2009	STH savings 180 days @ 3.50 per day per head	75% of animals sold in STH over the FY 2009	STH savings 180 days @ 3.50 per day per head	STH Cost savings of 50% for out year 2010	STH Cost savings of 75% for out year 2010
4,000	\$ 2,520,000	6,000	\$ 3,780,000	\$ 5,110,000	\$ 7,665,000

Table 5. Potential Costs to Prepare Animals in LTH for Sale (Sale without Limitation, Ages)

LTH Cost of \$200 per head for preparation	LTH Cost savings for FY 09 minus the cost	LTH Cost of \$200 per head for preparation	LTH Cost savings for FY 09 minus the cost	LTH Cost savings of 50% for the out year of 2010	LTH Cost savings of 75% for the out year of 2010
\$ 1,200,000	\$ 204,000	\$ 1,800,000	\$ 306,000	\$ 2,847,000	\$ 4,270,500

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Adjusting Sex Ratios to Favor Males

Introduction:

Increasing the proportion of males relative to females in wild horse populations, while holding the total population number steady, would decrease the number of mares on the range. This, in turn, would reduce the number of foals born each year and slow population growth. Use of fertility control, in addition to sex ratio adjustments, could further extend the time between gathers and result in fewer animals gathered and reduced program costs over the long-term.

Assumptions:

- ❖ Geldings would be likely to cause fewer impacts to the herd's social structure than studs as they would be less likely to compete with breeding animals for limited forage and water resources. Herd dynamics are expected to change somewhat with an adjustment in sex ratio.
- ❖ Based on anecdotal observations when geldings were released back into the HMA they were originally gathered from: a) they tended to remain near where they were released as long as there was adequate water and forage, b) they remained in groups of 2 to 4 rather than join with a producing band, c) being sexually inactive, they tended to be in better body condition than herd average, d) they generally lived to be quite old in comparison to sexually active horses, e) they were easy to recapture and many of them were recaptured and released several times.
- ❖ Using fertility control in addition to sex ratio adjustments would further lengthen the maintenance gather cycle of HMAs chosen for this option.
- ❖ Normal sex ratio is 50/50 males/females.
- ❖ NEPA requirements would be addressed within the gather plan/EA.

Description:

This option examines the opportunity to slow population growth by adjusting normal sex ratios (50/50 males/females) to 60/40, 70/30, or 80/20 males/females. This could be accomplished in a number of ways:

- Increasing the proportion of males by gelding studs and returning them to their home range;
- Increasing the proportion of stallions;
- Increasing the proportion of males in the herd with a combination of geldings and stallions;
- Applying fertility control to mares in addition to increasing the proportion of males.

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A sex ratio of 50% males to 50% females is the normal herd management standard. Table 6 below compares four different sex ratios and their potential impact on herd population growth over 11 years based on 100 trials using the Win Equus population model.

Table 6. Sex Ratio Adjustments: Potential Impacts on Average Population Size, Annual Growth Rate, and Removal Numbers Over 11 Years

Male to Female Sex Ratio (% males to females)	Average Population Size at the End of 11 Years	Average Annual Growth Rate over 10 Years	Median Number of Animals Removed to Maintain AML During 11 Years
50:50	607	18.2%	982
60:40	606	17.9%	947
65:35	600	15.9%	908
70:30	583	13.8%	870

This data suggests that adjustments in sex ratios to reduce the number of females within the herd would slow population growth, extend the gather cycle, and reduce the number of excess animals which would need to be removed over the long-term. Fewer animals would enter the National adoption pipeline, or STH or LTH, resulting in substantial cost-savings.

Alternatives for adjusting sex ratios:

- Removing studs from an HMA, transporting them to a BLM facility, gelding them, and then returning them to the same HMA.
- Gelding studs from different HMAs at a BLM facility, then returning them with other horses identified for release during ongoing gather operations.
- Gelding stallions on-site and releasing them after the gather operation.
- Removing more mares than studs and releasing the studs back into the HMA being gathered.
- Releasing studs held in facilities from other HMAs after a gather.



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Pros:

- The size of the breeding population would be decreased without decreasing the total herd size within an HMA.
- Population growth would be slowed because there would be fewer mares having fewer foals. Application of fertility control to breeding mares could further slow population growth.
- Rather than being placed in LTH, the studs or geldings would be returned to their home HMA where they are familiar with the range and able to move between forage and water (as needed) depending on range conditions.
- If stallions were returned to the range rather than geldings, they could be released directly from the trap site or temporary holding facility with no additional costs incurred for gelding.
- If studs could be gelded in the field, this would reduce or eliminate transportation costs to/from the BLM facility and reduce the risk for spread of infectious disease from the facility into the wild herd.
- Geldings may result in less stress to the herd's social structure than studs.

Cons:

- Sex ratio adjustments of less than 70/30 may not have a substantial effect on population growth rates.
- The behavioral effect of shifting sex ratios in favor of males is unknown. Increased competition between studs and geldings with mares and foals for limited forage and water resources could result. Behavioral problems are more likely the greater the adjustment or when using stallions rather than geldings. Studs are more likely to be aggressive in trying to reestablish a band. Foal infanticide may occur or increase due to increased stallion numbers.
- Increased monitoring of herd behavior would be needed to assess impacts to the social order of the herds where stallions are in the majority.
- If horses were moved to a BLM facility for gelding, there would be additional costs for transportation and holding, in addition to gelding costs. This approach also has potential to expose the geldings to infectious diseases which may be present in the facility. This would have potential to spread infectious disease into the wild herd when geldings are released back to the range.
- Stallions gelded in the field, and released soon after, could not be monitored closely following surgery. There would be no way to treat complications should they occur.
- A higher percentage of horses in each HMA would need to be caught to make administration of fertility control drugs effective (i.e. 80-100% of the total population) which could make individual gathers more expensive.

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Timeframe:

Implementation could begin at the next scheduled maintenance gather. Four or five years could be expected before positive financial returns would be seen due to extended gather cycle periods.

Cost:

The cost of releasing studs from the trap site would be negligible. Gelding in the field would cost whatever the contracted veterinarian charged (estimated at \$100 per head on average). Veterinary costs for gelding at a facility and returning the geldings to an HMA would include these costs plus additional labor and transportation costs. Cost savings would be realized at the end of four years when the normal maintenance gather could be extended depending on population growth rate.

If applied, the cost of fertility control would be approximately \$200 per head for the 22-month fertility control product plus application overhead costs, i.e. per diem, lodging for applicator(s), etc.

Benefit:

The ultimate benefit would be slowing population growth rates. This would extend the interval between maintenance gathers and result in fewer animals removed and placed in the adoption pipeline or LTH over the long term. Applying fertility control to breeding mares during a maintenance gather could extend the interval between gathers even further.

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Non-Reproducing Herds on HMAs and HAs

Introduction:

One option to reduce the number of wild horses or burros in short (STH) or long term holding (LTH) facilities would be establish non-reproducing herds (sterile animals) in some existing herd management areas (HMAs) or Herd Areas (HAs). While some HAs may not have habitat sufficient to sustain breeding animals in a healthy condition, they could potentially sustain small numbers of non-breeding animals. To implement this option, complete gather and removal all animals in selected areas would be conducted to the extent possible. Animals would be returned to the HMA or HA after they have been sterilized.

Assumptions:

- ❖ Selected HMAs/HAs would need to be isolated to prevent egress of animals that may wander off-site.
- ❖ Individual states/field offices would need to address site specific issues or conflicts in Land Use Plans and Activity Plans. This would not be addressed on a Bureau wide basis.
- ❖ Some HMAs would be less appropriate for conversion to non-reproducing herds because of political or public interest.
- ❖ Gelding male horses is currently the safest, most cost-effective method to produce a sterile animal. Spaying mares could be considered but would entail complex surgery. There is no drug or chemical treatment available to easily sterilize either male or female horses.

Legal Authorities:

BLM has broad discretion on how it manages wild horses and burros. A recent solicitor's interpretation of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA) suggests BLM may implement a broad range of management strategies to achieve the program's goals. This could include replacing reproducing (breeding) herds with sterile herds of animals in some HAs or HMAs. Some public may feel that such an approach is inconsistent with BLM's requirement under the law to maintain a "thriving natural ecological balance" or under the regulations to assure a "self-sustaining" population of wild horses and burros. Appeals or litigation can be expected and could take several years to resolve.

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Description:

Individual states/field offices would select HMAs/HAs as candidates for the long-term management of non-reproducing herds. Site-specific environmental analysis (NEPA) and amendments to Land Use Plans would need to be completed. The complete gather and removal of all animals in selected areas would be conducted to the extent possible. Animals would be returned to the area after they have been sterilized.

Pros:

- Sterile animals would not enter the adoption pipeline or LTH.
- Each state has identified HMAs as potential candidates for the management of non-reproducing herds.
- Follow-up gathers would not be needed on a regular 3-4 year maintenance cycle, if at all.
- Individual states could have their own individual LTH areas on public land.
- Some HAs or HMAs may be suitable for stable populations that do not have the habitat or resources to support a growing population.

Cons:

- A regulatory change to allow for management of non-reproducing herds in existing HMAs/HAs could be needed prior to implementing this option. This could take 2-3 years to complete.
- Implementation would only be possible following site-specific NEPA analysis and Land Use Plan amendments, as needed.
- Gathering every animal off most HMAs is very difficult. In order to capture 90-100% of the actual population, gather costs could increase to \$1,000 or more per head removed during the latter part of each gather and extend the operations time. A totally non-reproducing herd may have to be established over a long period of time at very high cost.
- Fertile domestic horses are occasionally turned loose in HMAs and HAs. These animals could re-establish a fertile subpopulation of animals over time.
- Some members of the public may believe BLM is attempting to eliminate wild horses by converting breeding populations to non-reproducing herds. Others may feel each herds is a unique genetic resource and needs to be preserved although genetic analysis of most BLM herds indicates most are not unique.
- Non-resident animals released into non-reproducing HMAs or HMAs would not be familiar with the existing habitat. They may have difficulty adjusting to their new environment or be unable to find adequate forage and water. This difficulty would increase for animals which have been held in captivity for several months or years.

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- ❑ Most HAs with potential for non-reproducing herds are currently not being managed for wild horses because they may not have the habitat (forage and water) necessary to sustain breeding animals in a healthy condition over the long term. However, they could potentially sustain small numbers of non-breeding animals as these animals have a lower nutritional demand.
- ❑ The lifespan of wild horses in a non-reproducing herd is expected to be substantially longer than for the same wild horses in a breeding herd. By avoiding the stress associated with breeding and lactation, these animals will live longer. As a result, there will be little opportunity to introduce new individuals into the herd to replace any death loss except in the long-term.
- ❑ While each non-reproducing HMA/HA could delay the need for a new LTH facility, within a year or two, additional space would be needed. This alternative does little to address the problem of wild horses or burros for which there is no adoption or sale demand over the long term, but could provide some additional low cost holding capacity in the interim.

Timeframe:

If a regulatory change is needed to accommodate non-breeding herds, it could take 2-3 years to complete. An additional 1-2 years would be needed to complete the necessary Land Use Plan Amendments for selected HMAs/HAs. Another 6-12 months would be needed to complete the necessary site-specific environmental analysis (NEPA)/adjustments to Herd Management Area Plans. Legal challenges would be expected for these actions and could take several years to resolve.

Cost:

Complete removal gathers would be very intensive and could take multiple attempts over several years to accomplish. The cost to implement a complete removal gather could average \$1000/head.

Gelding then releasing studs in the field would cost about \$100, while sterilizing mares (spaying) could average \$300 per mare.

Benefit:

LTH holding areas could be established in each state with additional holding for perhaps 2000-3000 horses. This would save an estimated \$12,000 per animal in LTH costs over their lifetime (between \$24-36 million over 20 years).

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Multiple Alternative Wild Horse Management Action Plan

Introduction:

This option would implement a number of alternative actions to manage an individual herd. In combination, the selected management actions would reduce gather frequency. This would result in fewer animals removed and fewer animals entering the adoption pipeline or long-term holding (LTH). Actions considered include removal, adoption, sale, fertility control, sterilization and the return of all unadopted or unsold animals to the range.

A hypothetical HMA is used as an example of how this alternative management action plan could be implemented. The assumptions associated with the hypothetical HMA and its management follows.

Assumptions:

- ❖ The current population is estimated as 425 animals including the current year's foal crop.
- ❖ The AML range is 175 to 250.
- ❖ The HMA is isolated and does not have movement in and out of the herd.
- ❖ Funds are available for holding animals until adoption, sale or sterilization are complete.
- ❖ None of the animals removed will enter the National Adoption Program. Adoption and/or sale efforts will be limited to local events and facilities.
- ❖ A veterinarian will be available for the surgical sterilization of animals being returned to the range.
- ❖ If gather operations are completed in early summer (no later than August 1) spaying release mares may be practical. A later start date would preclude spaying, unless the mares are open (unbred) or held until after foaling.

Description:

Wild horses need to be removed from an HMA in order to achieve and maintain the Appropriate Management Level. For our hypothetical HMA, horses would be removed to the low end of AML (175). This would require removal of 250 head from the current population. The 250 animals removed would be offered for adoption or sale. Upon completion of the adoption and sale period, any remaining animals (those not adopted or sold) would be sterilized (gelded or spayed) or receive fertility control (mares) and returned to the HMA.

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Sales would be conducted using the current Bill of Sale with the intent clause which restricts a person's ability to resell, trade or give away the animals for processing into commercial products.

Holding times and sterilization procedures would vary depending on the sex distribution of the animals being returned to the herd. Gelding of wild horse stallions is a more routine and less complex procedure and requires shorter holding times. The sterilization of wild horse mares has not been perfected or widely used.

Pros:

- Removed animals not adopted or sold would be returned to the range rather than entering the National adoption pipeline or LTH.
- A component of the HMA would be non-reproductive, resulting in a reduced population growth rate.

Cons:

- Some states (i.e. Nevada) may need to remove large numbers of excess wild horses to achieve and maintain AML. There would be a high likelihood that the supply of animals would exceed the demand for these animals through adoption or sale. This could lead to the need to return numbers of animals to the range substantially in excess of the high-range of AML. Legal action for failure to achieve and maintain AML could be expected as a result.
- Without the ability to sell animals without limitation, there would be potential for more animals to be released, and for the total post-gather population to exceed the high point of the AML.
- Depending on the time of year and pregnancy status of the mares removed, it could be 6 months or more before they would be candidates for spaying. Spaying mares could result in death loss of 10% or more.
- Any foals born to mares in captivity would increase the length of the holding period and increase the number of animals to be adopted, sold or returned to the HMA.
- The necessary Land Use Plan amendments and site-specific environmental analysis (NEPA) would need to be completed before a multiple alternative management action plan could be implemented for a specific HMA.
- Gather costs could increase if there is a preference for adopting or sterilizing one sex over another.

Timeframe:

Any necessary Land Use Plan Amendments could take 2-3 years to complete. Another 6-12 months could be needed to complete site-specific environmental analysis (NEPA) before a multiple alternative management action plan could be implemented for a specific HMA. Appeals or litigation would extend this timeframe.

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Once the HMA is gathered, it could take up to six months to adopt or sell the animals removed. To avoid returning numbers of wild horses to the range in excess of the high-range AML, states may need a change in policy allowing the sale of any unadopted/unsold animals without limitation after 90 days.

It could take another 4-6 months to sterilize the remaining animals and return them to the range.

Cost:

Removal operations would cost \$500-\$600 per head. The cost of meeting NEPA requirements would vary. Adoptions and sales could result in additional costs of \$500-\$1000 per horse depending on the level of advertising and adoption setup costs. Gelding and spaying procedures would cost approximately \$100-\$300 per head.

Using the hypothetical HMA as an example, the gather would be conducted in early July, as follows:

- Actual population is estimated at 425 head.
- To reach the low range of the AML or 175 head, 80% of the herd would need to be gathered (340 animals) and 250 animals would need to be removed.
- 175 animals would remain on the range after selective removal of the younger more desirable horses (250).
- All animals gathered would be a 50/50 split of mares and stallions.
- The younger and more adoptable wild horses would be prioritized for removal.
- All the stallions removed (125) would be gelded at BLM facilities at a cost of \$100 per head.
- Each wild horse removed would be in preparation for at least 30 days. There they would be vaccinated and cared for at a cost of \$6/head/day (\$45,000).
- Of the 250 horses available for adoption, an estimated 30% would be adopted (56 mares and 18 geldings).
- Selling the remaining wild horses under the current Bill of Sale (with the intent clause) would potentially place an additional 15% of the animals in good homes (14 mares and 12 geldings).
- Following adoption and sale (60 days), an estimated 55 mares and 95 geldings would remain at the preparation facility at an average cost of for \$3.50/head/feed day (\$31,000). Of these, about 20% of the mares would be dry (11 mares) and could be spayed at a cost of \$300 per head.
- The remaining 44 mares would have PZP administered before they are returned to the range at a cost of about \$200 per head. These mares and geldings would need to be in the facility for at least 30 additional days while mares are treated with fertility control (spayed or administered PZP) at an average cost of \$3.50/head/feed day (\$16,000).
- About 150 wild horses would be released following capture, adoption/sale, gelding, spaying or application of PZP.

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- The addition of 150 release horses to the 175 animals remaining on the range immediately following the gather would result in a total post-gather population of 325 animals, about 75 animals more than the high range of the AML (250 animals).
- The total cost to implement the multiple alternative management action plan would be about \$550,000.

A summary of the estimated costs for the multiple alternative management action plan is provided in Table 7.

Table 7. Estimated Costs (Multiple Management Action Plan)

# of animals gathered	Cost for gather operation	Preparation cost	Gelding cost	Adoption cost	Holding cost after adoption	Spaying cost on mares	Fertility cost on mares	Total horses released back to the HMA	Total cost
340	\$ 170,000	\$ 37,500	\$ 12,500	\$ 250,000	\$ 55,440	\$ 3,300	\$ 8,800	150	\$ 537,540

Benefit:

Using multiple actions to manage an individual herd by offering animals for adoption or sale, as well as returning non-reproductive animals to the HMA, is proactive and unique. It could provide local alternatives to reduce the number of animals entering the National adoption pipeline and LTH facilities.

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Buyout of Permits/Entering into Agreements with Livestock Permittees To Use Their Grazing Permits

Introduction:

One alternative to placing additional horses in long term holding (LTH) could include returning non-reproducing horses back on the range utilizing existing livestock grazing permits. This could be done by leasing existing livestock grazing permits or purchasing base properties with attached grazing permits and converting cattle (or sheep) AUMs to horse AUMs for use by BLM or qualified third parties.

Assumptions:

- ❖ Implementation would be dependent on livestock grazing permittees who are willing to enter into lease agreements or sell their permits.
- ❖ BLM or a qualified third party would have the funding to lease or purchase these permits.
- ❖ Most states do not issue year-long grazing permits; therefore, relatively few year-long permits would be available for possible purchase.
- ❖ Any horses turned out on a grazing allotment under permit through this plan would be sterile.

Legal Authorities:

The 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA) directs the Secretary of the Interior, through the Bureau of Land Management (BLM), to manage and protect wild free-roaming horses on the public lands. The WFRHBA, however, is explicit in not authorizing the BLM “to relocate wild free-roaming horses or burros to areas of the public lands where they do not presently exist.”

A solicitor interpretation concludes that 16 U.S.C. § 1339 does not prohibit BLM from moving excess horses to LTH areas on public lands, because no case law has interpreted section 1339 to imply such a prohibition. Should BLM be challenged on the basis of 1339, the solicitor believes BLM could prevail. Others may feel there is good reason to think that Congress’s intent behind section 1339 was to preclude the Department from establishing new wild horse ranges. Should BLM elect to move excess horses to LTH areas on public lands, appeals or litigation would be likely and could take years to resolve.

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Description:

BLM could potentially acquire permits for wild horse use in one of two ways:

1. **Leasing of Grazing Permits.** One option would be to lease a grazing permit. Under this option, wild horses would be authorized to use the available forage rather than domestic livestock. The livestock operator would be responsible for the day to day management of the wild horses under permit, i.e. pumping water, repairing fence, and checking range conditions. The federal government or a third party would pay the livestock operator for this service.
2. **Purchase of Base Properties with Attached Grazing Permits.** Another option would be for the Federal government or a third party to purchase base properties (water or land) and the associated permits from the public land grazing permittee. These permits would then be converted from domestic livestock use to wild horse use. The new holder of the permit would be responsible for the management of the animals, i.e. maintenance of range improvements, pumping water, etc.

Pros:

- Converting livestock permits to wild horse use would allow BLM to maintain wild free-roaming animals in their natural environment and reduce the number of wild horses in contracted LTH facilities.
- Leasing permits from a willing public land grazing permittee would be the least cost in the short term. Under this option, the grazing permittee would be responsible for maintaining the range improvements needed to properly manage wild horses on the permit.
- Purchase of base properties and the associated grazing permits would represent a large initial investment (one-time cost). Thereafter, annual costs for operations and maintenance would be incurred. However, this option would result in greater flexibility than single year leases which could result in the need to quickly remove wild horses if the lease(s) were not renewed.

Cons:

- Some members of the public, media and Congress may not understand why a livestock permittee should be paid for their permit. They may feel livestock permits are a privilege offered to the permittee by the Federal government and as such, no payment is required.
- Small rural counties dependent on the property taxes base properties generate to maintain roads and schools would be opposed to their acquisition by the Federal government. Payment in lieu of taxes (PILT) would be unlikely to compensate these counties for the reduced tax base.

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- BLM would have relatively few management options if wild horses grazing under the permittee's management exceed standards and guidelines. Adjusting season or duration of use with management actions such as fencing or pasture rotations would be largely incompatible with wild horse use. As a result, BLM may need to reduce the number of wild horses authorized to use the permit. However, before horses could be removed, alternative location(s) to hold the animals would need to be found.
- Recurring annual costs for range improvement maintenance, pumping of wells, inspecting the herd, etc. could be substantial.
- The initial cost of purchasing base properties and associated grazing permits would be high.
- Neither the range (43 CFR 4100) nor wild horse and burro (43 CFR 4700) regulations cover this type of transaction. New regulations would have to be developed, NEPA compliance completed, and opportunities for administrative remedies provided to implement the new regulations.
- Site-specific environmental analysis and Land Use Plan Amendments would be required to change the class of animal from domestic livestock to wild horses.
- Most states do not issue year-long grazing permits; therefore relatively few year-long permits would be available for possible purchase.
- Due to the generally low productivity of many BLM ranges, large allotments would be needed to hold any significant numbers of wild horses. For example, using a carrying capacity of 20 acres/AUM, an allotment would need to be about 120,000 acres in size to hold 500 wild horses year-long. In the absence of an adequate mix of spring/summer and fall/winter range, allotments would potentially need to be much larger.
- While every large allotment authorized for use by wild horses would delay the need for opening new LTH facilities off-the-range, additional LTH space could be needed within a few years. For example, every 1000 horses gathered off the range, on average, 400 horses go to LTH.
- BLM would not have the capability to move wild horses in an expedient manner if there is drought or grazing standards and guidelines are exceeded. There would be no place to move the horses to and little/no funding or contractor capability to capture/remove them.
- Most of the animals would be maintained in a high desert environment, where there is a high probability of drought and fire affecting range conditions. It would be very difficult to readily adjust levels of use or to move horses to another area or facility if needed in response to a shortage of water, forage or fire.

Timeframe:

The needed regulatory change would take approximately 2-3 years to complete. It could take up to 5 years to acquire (purchase) or lease suitable base properties and associate grazing permits. It is not uncommon for land sales to take 5 years, including negotiations to reach a price agreeable to the seller and the buyer, as well as the time needed to complete the required feasibility studies, clearances, and

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appraisals. Another 1-5 years would be needed to complete the necessary site-specific environmental analysis (NEPA) and Land Use Plan amendments. Appeals or litigation could extend this timeframe.

Cost:

Leasing year-long grazing privileges sufficient for 500 horses could run as high as \$120,000 annually, based on an estimate of \$20.00/AUM to lease a livestock allotment.

Base properties with 6-month grazing permits sell for \$35-50 AUM, while year-long leases sell for \$70-75 per AUM. Another \$300-1000 per acre would be needed to purchase the associated base property and water rights. In some areas, costs could be considerably higher (e.g. in Nevada, water rights often sell for more than \$10,000 per acre foot). The total price to purchase a base property, water rights, and the associated grazing permit for 500 horses (6,000 AUMs) could be \$625,000 or more.

Annual expenses could reach \$75,000 or more to manage/operate each base property/grazing permit. Included would be labor (one full-time federal employee or equivalent) to maintain fence and other range improvements, pump water, irrigate the base property, and inspect the animals. At times, additional funding, labor, supplies and equipment would be necessary to perform heavy maintenance or reconstruction of range improvements.

Benefits:

Converting livestock permits to wild horse use would allow BLM to maintain wild free-roaming animals in their natural environment and reduce the number of wild horses in contracted holding facilities. For every wild horse using LTH on public lands, an estimated \$12,000 over their lifetime could be saved.

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Increased Use of PZP Fertility Control

Introduction:

This option proposes increased use of PZP fertility control for reducing population growth rates in wild horse herds. Porcine zona pellucida (PZP) vaccine, the most promising of these agents, is currently being used by BLM in the field. Increased use of PZP could be accomplished in one of three ways: (1) conduct more frequent gathers (without removals) to apply PZP pellets (e.g., every two years) to achieve continuous suppression of population growth; (2) expand opportunities for remote delivery (darting) of the one year PZP agent; (3) require the use of selective removal at each gather *and* require the use of PZP for every mare released.

Assumptions:

- ❖ Application of the 22 month agent every two years could achieve a long-lasting and potentially continuous suppression of wild horse population growth.
- ❖ To effectively reduce population growth, treatment of a large enough proportion of the breeding population is required (70 – 90% of the breeding age mares must be treated). This means 80-100% of the actual population must be captured.
- ❖ It will be more difficult to retain enough mares for PZP treatment and release *and* achieve AML in HMAs which are significantly above AML when gathered.¹
- ❖ The most significant cost of using PZP is associated with the time and money required to capture and treat each horse.

¹ Example: The current estimated population of wild horses within the HMA is 1,400 animals. AML is 188-300 animals. To reach low range AML, 1,212 wild horses would need to be removed. At gather efficiencies of 80%, a maximum of 1,120 animals would be captured, lower than the total number needed to reach the low range of AML. At 90% gather efficiency, 1,260 animals would be captured, leaving only about 48 animals available for PZP treatment and release. By contrast, if the current population is 600 animals, 412 animals would need to be removed to reach low range of AML. At 80% gather efficiency, 412 animals would be captured and removed to achieve low range AML. However, at 90% gather efficiency, 540 animals would be captured, leaving up to 128 animals available for PZP treatment and release.

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Description:

BLM has promoted and supported the development of an effective contraceptive agent for wild horses since 1978. Porcine zona pellucida (PZP) vaccine, the most promising of these agents, is currently being used by BLM in the field. There are two forms of the conventional PZP agent:

1. A one-year agent, delivered as a liquid primer shot and follow-up booster one month later; additional boosters must be injected annually by hand or by darting to continue treatment.
2. A 22-month agent that includes the same primer shot as well as a simultaneous treatment with slow release pellets that booster the vaccine over time. Efficacy rates of 94% infertility in Year 1, 82% in Year 2 and 68% in Year 3 have been reported have been reported for PZP-22. However, maximum effectiveness is not achieved unless mares are treated during a 3-4 month window prior to foaling. Therefore, the best time to apply PZP is during the winter gather season.

Increased use of PZP can be accomplished by expanding the opportunities for application. Potential opportunities to increase the use of PZP include: (1) conducting more frequent gathers (without removals) to apply PZP pellets (e.g., every two years) to achieve continuous suppression of population growth; (2) expand opportunities for remote delivery (darting) of the one year PZP agent; (3) require the use of selective removal at each *and* require the use of PZP for every mare released.

During gathers it is essential that more mares are gathered than need to be removed. If 90-100% of the horses could be captured or if gathers could be conducted in HMAs only moderately (50-100%) over AML, it would be possible to treat and release more mares.

Pros:

- Use of fertility control in wild horses has potential to slow population growth, reduce gather frequency, and reduce the number of horses which need to be captured and removed over time. Substantial savings in gather/removal and STH and LTH could result if an effective fertility control agent is found.
- The one-year and 22-month PZP agents are effective at reducing foaling rates for at least those periods of time.
- These agents are currently available for investigational use.
- Current PZP formulations may be able to lengthen the gather cycle by one year.

Cons:

- It is extremely difficult (and costly) to capture enough additional mares for treatment in HMAs that are several times over the appropriate management level (AML).
- The selective removal approach must be used in order to apply the treatments at gathers.

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- The most effective formulation is a one year vaccine that must be administered annually. However, it is not feasible to gather wild horse herds every year to administer the vaccine.
- Remote application of the one-year formulation is problematic as it is very difficult to approach most wild horses and burros on western rangelands closely enough to allow darting (i.e. follow-up treatment). Also, only a limited number of people are currently trained to administer the product by darting.
- Currently the 22-month pellets can only be administered by hand injection after horses have been captured (i.e. remote application is not possible for PZP-22 at the present time).
- Maximum effectiveness is not achieved unless mares are treated during a 3 to 4 month window prior to foaling.
- Excess wild horses would still need to be removed from treated herds over time because PZP does not eliminate reproduction entirely.
- The use of PZP under an investigational exemption requires treated mares to be physically marked (freeze branded) or clearly identified through the use of photographs in order to be compliant with FDA requirements; the products are technically challenging to mix and administer and their safety has not been confirmed by the FDA or EPA.
- A longer acting three to four year agent is needed to significantly reduce herd growth rates and achieve meaningful cost savings.
- The use of fertility control has received mixed reaction from Wild Horse Interest groups.
- The application of fertility control to all mares in an HMA could threaten herd viability in the event of a catastrophic event.
- BLM will continue to treat herds with PZP agents where practical, however, cost savings from reduced reproduction rates will not be realized in the immediate future.

Timeframe:

Increased use of PZP could begin in about 6 months (as soon as there is enough product available for use). Increased use of PZP would also be dependent on sufficient funding to allow for gathers. Targeting HMAs close to the high range of AML when gathered would increase the number of mares potentially available for PZP treatment and release post-gather. Training a larger pool of applicators for mixing and remote delivery of the liquid agent could be done concurrently but would take 3 to 6 months, during the winter gather season.

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Cost:

- The most significant cost of using PZP is the time and money required to capture and vaccinate the horses. These costs can range from \$500-1,000. The 2-year pelleted vaccine costs approximately \$200 per vaccination which includes the liquid primer dose and the pellets. To implement increased use of darting, there would be costs associated with training new darters (approximately \$2500 per person) plus equipment, vehicles, seasonal labor and travel costs. Increased use of PZP vaccination or darting would entail added administrative costs for tracking and monitoring.

Savings would not be realized or apparent until the next time the herd is gathered which would normally be 3 to 4 years later.

Benefit:

If sufficient numbers of mares can be treated often enough (i.e. every two years), population growth rates could be reduced and gather cycles extended. Over time, substantial savings could be generated from reduced gather/removal, preparation and holding costs.

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Fertility Control for Stallions (Castration and Vasectomy)

Introduction:

One suggested approach for controlling population growth is to reduce fertility among male horses in an effort to prevent conception in mares. This approach assumes male horses retain enough male behavior following sterilization (through castration or vasectomy) to continue to hold harems of mares and prevent mares from being bred by other fertile stallions.

Assumptions:

- ❖ There is no approved or experimental drug available for use that that had been shown to produce a chemical vasectomy for horses.
- ❖ Any horse receiving a vasectomy would be freeze marked to identify for future management and monitoring purposes.

Legal Authorities:

The 1971 Wild Free Roaming Horses and Burros Act, as amended, recognizes sterilization as one option for maintaining the number of horses on the range at the appropriate management level (AML).

Description:

The basis for this option is that harem stallions gelded well after maturity would retain enough male behavior to continue to hold harems of mares and prevent these mares from being bred by other fertile stallions. It is also assumed stallions that have received a vasectomy retain their testicles and would continue to behave and perform like fertile stallions. Vasectomies could be performed in temporary holding corals during gather operations or at BLM facilities with horses returned to the range following recovery from surgery.

Pros:

- A permanent surgical vasectomy procedure could be developed to sterilize wild horse stallions.

Cons:

- It is estimated that up to 40% of all mares are bred by a stallion other than the dominant herd stallion under normal conditions, with fertile, fully virile stallions. Given this observed behavior, it is likely competing fertile wild horses stallions would eventually impregnate all mares on the range. This would be expected to lead to an extended breeding (and foaling) season.

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- Vasectomy in stallions is not a standard technique used in veterinary practice or research. Vasectomy can be done in horses, but is much more difficult compared with vasectomy in rams or bulls. The approach would require general anesthesia and expert technique developed through trial and error specifically for this application.
- The effects of this approach on horse behavior as well as harem and herd behavior, harem integrity, harem or social group sizes, horse health and welfare are unknown.
- The potential genetic contribution of animals that have been permanently sterilized is lost forever.
- Pain management therapy following surgery would be difficult or impossible for wild horses in the field or following release.
- Surgical complications would be very difficult to treat in wild horses and would likely result in prolonged animal suffering or euthanasia.
- If mares were repeatedly bred by infertile, vasectomized stallions, the breeding season would be extended for many heat cycles over several months. Mare condition could deteriorate over the course of the breeding season.
- With extended breeding seasons, extended foaling seasons would follow. Foal survival may or may not be affected.
- Previously uncaptured and fertile stallions would eventually impregnate most, if not all, mares. One stallion could impregnate over 100 mares. Even if capturing all the stallions was the intent, it would be rare that every stallion could be captured for treatment.
- Gelded stallions will eventually lose most of their virility. Over a short time, within a few years or less, most geldings would lose interest in keeping a harem of mares.

These observations are supported by the literature that reports 15-30% of foals were not sired by a stallion associated with the dam's band (Bowling 1990, Kaseda 1996). Further, Eagle (1993, also reported by Asa 1999) studied the effects of surgical vasectomy in two Great Basin Herds and did not find a promising result. Foaling rates only seemed lower in one HMA in the first year of the study, with only a marginal effect reported for the second year and no significant affect detected in 6 of 7 observations over two years in a second HMA.

The authors concluded that "although sterilization of dominant males may be an effective treatment to reduce foaling in a small sample of bands selected from a population, this treatment might not limit population growth." Further, they concluded that as the probability of breeding with a sterile male increased, the breeding season (and subsequent foaling seasons) would become extended into the late summer and fall months. Also noteworthy, 5% of the stallions selected for treatment died or were euthanized as a result of complications associated with the procedure.

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When contraceptive approaches have been reviewed, both the National Research Council (1982) and an independent study that used simulation modeling (Garrott 1992) concluded that female-oriented contraceptive techniques would have a higher probability of success when applied on a management scale and only mare-directed approaches were chosen or recommended for further study.

It is the general opinion shared by the National Research Council (1982), the National WH&B Research Advisory Committee and most scientists working in the field that controlling wild horse population growth by modifying stallion fertility has limited promise.

Timeframe:

If a new technique addressing fertility control from the male side of the equation was developed, it could be applied following pre-gather NEPA review. If a population effect was achieved it would become apparent one or two years after the application, depending on when the application took place relative to the current breeding season. Returns to the program would not begin for 4-5 years, at the next gather cycle.

Cost:

The cost for veterinary surgical time and medications is estimated at \$150 to \$250 per head with increased gather handling and holding costs of approximately \$250 per head.

Benefit:

No benefit is expected as it seems unlikely this technique will significantly slow population growth rates.

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Implement Research and Use of GonaCon™

Introduction:

Population management would incorporate the use of GonaCon™ in mares to help reduce population growth within wild horse herds. GonaCon™ is an experimental fertility control vaccine. It is not yet available for commercial use. GonaCon™ reduces or eliminates the production of sex hormones (e.g., estrogen, progesterone, and testosterone) within the target animal. Current research indicates vaccination with GonaCon™ has potential to maintain a high level of contraception within wild horse mares for one year.

Assumptions:

- ❖ GonaCon™ meets the efficacy requirement (90% effective) for a single-dose, one year vaccine.
- ❖ Similar to PZP, use of GonaCon™ would require the ability to treat a large enough proportion of the population to be able to effectively control population growth.
- ❖ The most significant cost of using GonaCon™ is associated with would be the time and money required to capture and vaccinate the horse.

Description:

GonaCon™ is a gonadotropin-releasing hormone (GnRH) immunocontraceptive vaccine developed by scientists at the U.S. Department of Agriculture's (USDA) Wildlife Services' (WS) National Wildlife Research Center (NWRC). Presently, applications of GnRH are being researched in controlled field studies for potential use as a wildlife management tool for deer.

The single-shot, vaccine stimulates the production of antibodies that bind to GnRH. GnRH is a hormone in an animal's body that signals the production of sex hormones (e.g., estrogen, progesterone, and testosterone). By binding to GnRH, the antibodies reduce GnRH's ability to stimulate the release of these sex hormones. In theory, all sexual activity is decreased, and animals remain in a non-reproductive state as long as a sufficient level of antibody activity is present.

GonaCon™ could be administered whenever fieldwork is most efficiently conducted and when animals can be captured safely and easily. Targeted mares would be treated through a single injection into the muscle while the mare is restrained within a squeeze chute. To avoid treating animals repeatedly, which could have expose them to additional stress and potential injury, the treated animals would be marked with freeze brands.

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Pros:

- NWRC has received Environmental Protection Agency (EPA) authorization for the investigational use of GonaCon™. This permit allows NWRC researchers and their collaborators to ship and test the vaccines on both captive and free-ranging animals. Tests of the GnRH vaccine are ongoing in several states and countries, involving a wide range of wildlife and feral species, including horses.
- The health effects associated with GonaCon™ are minimal. In field and pen studies, deer showed no evidence of inflammation at injection sites, and blood chemistry was similar among treatment and control groups. Vaccinated deer showed a decrease in sexual activity and breeding behavior.
- GonaCon™ is a single-shot, vaccine that is showing potential as a practical management tool. Efficacy rates in horses are reported as 94% in year one following treatment.

Cons:

- At this time GonaCon™ can't be administered by darting.
- GonaCon™ is currently not available for management use under the authority of the EPA and the registration is in process for deer only.
- Efficacy after the first year appears to be similar to or somewhat lower than the PZP-22 that BLM currently utilizes.
- GonaCon™ will be registered as a "Restricted Use" product. Although final label language has not been negotiated with EPA, NWRC anticipates the product will be labeled for use by State or Federal wildlife or natural resources management personnel or persons working under their authority. GonaCon™ users will need to follow State authorization processes.

Timeframe:

The National Park Service is planning a field trial with wild horses to investigate the efficacy of GonaCon™ as a tool to control population growth. However, it may be several years before GonaCon™ is ready for field use on an experimental basis in wild horses. The developer of GonaCon™ must obtain the necessary documentation and approvals from either EPA or FDA to investigate the vaccine on a broader scale than currently with the Nevada estray horse trials.

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Cost:

The current estimated cost of the vaccine is \$20 per dose. The main cost of using GonaCon™ is associated with the time and money required to capture and vaccinate the target animals. The estimated cost of vaccinating a wild mare ranges from \$500 to \$1,000 if capture and marking are required.

Benefit:

GonaCon™ has the potential to reduce foaling rates for one year following treatment. If GonaCon™ was longer lasting or available for management use it would offer BLM an alternative to PZP vaccines.

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Spaying Mares (Ovariectomy)

Introduction:

The permanent sterilization of mares by spaying (ovariectomy) would be incorporated into the management of wild horses and burros with permanently spayed mares returned to the range as a component of the herd or as a member of a non-reproducing herd.

Assumptions:

Spaying would be by a veterinarian using surgical techniques accepted and approved by American Veterinary Medical Association (AVMA) and the veterinarian community.

Legal Authorities:

The 1971 Wild Free Roaming Horses and Burros Act, as amended, recognizes sterilization as one option for maintaining the number of horses on the range at the appropriate management level (AML).

Description:

The permanent sterilization of mares by spaying (ovariectomy) is a surgical technique that has been used in veterinary medicine for a number of years. There is no chemical or drug treatment for permanently sterilizing mares. Surgical techniques are the only approach available at this time. Three techniques are used to spay mares: (1) colpotomy (a vaginal approach) uses an incision made in the cranial vaginal wall and a tool called an ecraseur which works like a gelding emasculator, to crush the blood supply and connective tissue attachments to the ovary, stop blood flow and remove the ovary; (2) removing the ovaries surgically through incisions in both flanks of the mare; and (3) a relatively new technique using a fiber-optic laparoscope to make the surgery less invasive than a traditional flank surgery.

Veterinarians working with the National Wild Horse and Burro (WH&B) Program have done both the vaginal and flank procedures in an extremely small number of animals, so the program has very limited experience in doing these procedures. A small group of wild horse mares from the Sheldon National Wildlife Refuge, managed by the US Fish and Wildlife Service, in Nevada have also been spayed by colpotomy as a pilot effort. The results of this project are not yet available for review.

Spaying domestic horse mares is not a common procedure as compared to gelding stallions. Spaying in mares is mostly used to change their behavior, not as a population management tool. Any form of the surgery brings inherent risks for internal bleeding should blood supply not be cut off adequately during surgery. Peritonitis (abdominal infection) is the most common fatal complication following this procedure. Mares that are more than 60-90 days pregnant are not candidates for an ovariectomy due to the increased blood supply associated with fetal development. Performing ovariectomy prior to about 90 days gestation will cause abortion. While a mare is cycling, blood flows can be high enough to result in complications of an ovariectomy.

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Dry mares that have not foaled recently, are not actively cycling and are not pregnant would be the best candidates for the surgery. These criteria would limit the pool of eligible mares to a small percentage of newly gathered mares. A veterinarian would need to assess each potential candidate prior to the surgery.

Location Options – Field vs. BLM Facilities: Spaying in the field during a gather operation would require an increased ability to sort and segregate potential candidates for spaying. Modifications to the chute system to better accommodate the surgical procedure would be necessary. Using chemical and physical restraint, mares would be identified as non-pregnant or minimally pregnant and then spayed. Local veterinarians or a contract veterinarian would be needed at the gather site; this would increase costs. Performing additional procedures during gathers would increase the performance time and cost.

Spaying mares would also be a logistics issue for BLM facilities. As they receive horses from a gather/removal operation, most facilities focus on getting the animals Coggins tested, freeze-marked, vaccinated, and settled into the facility (i.e. used to domestic hay and water troughs). During summer-time removals, pairing mares with their foals is another significant consideration with newly removed horses.

BLM's ability to sort mares that may be candidates for spaying can be impacted by a number of factors including facility space, health of the animals being removed, and upcoming gathers. This could require a facility to delay spaying procedures until the facility has the time and space needed to effectively identify and evaluate candidates for spaying. It could be several weeks or months before spaying procedures could begin.

Most BLM chute systems are not designed for access to animals from the rear to conduct spaying operations in a standing position. Facility veterinarians and staff would need to either adjust current chute systems, purchase new chute systems, or design different procedures to undertake the spaying of mares. Each facility would need to adapt over time to develop the best techniques and procedures to spay mares *and* assure the safety of the animals, the staff and veterinarians.

Pros:

- Spaying mares is a permanent, 100% effective form of fertility control. It could provide BLM another tool to limit population growth and address/reduce holding costs if an effective surgical technique/process could be developed.
- Spayed mares could be used to establish a non-reproductive herd of female horses or a component of the herd.

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- Spaying mares in the field/removal setting may provide significant advantages by returning a mare to her original herd area. It would also reduce holding time and the costs associated with spaying mares at BLM facilities. Spayed mares would be returned to their natural environment following removal operations. They would not have to re-adjust to the herd setting as they would if they had been held in BLM facilities for a significant period of time. Spaying in the field would also reduce the potential risk for spread of infectious disease into the wild herd which could result with spaying/holding at a BLM facility for an extended period.
- Conducting spaying procedures at BLM facilities would better enable the facility and staff to manage the health of each mare pre-and post-surgery. The pregnancy status and overall health of candidate mares could best be evaluated at the BLM facility where staff and facility veterinarians are on-site to continually monitor and observe animal health.
- Veterinarians and staff at BLM facilities have significant experience in modifying facility operations to incorporate new procedures and techniques while making them as safe and efficient as possible for the animals and the staff.

Cons:

- Spaying mares could pose a significant challenge for the wild horse program. Mortality rates for the procedure, even among domestic horses, are considerably higher than those associated with gelding stallions.
- To assure safety for veterinarians, animal handling crews and the animals, several modifications in animal handling procedures, contracts and equipment in facilities and at gathers would be needed to accommodate spaying mares.
- Modifications to gather, preparation and holding procedures, contracts and equipment would add significant costs to the program.
- For spaying to be effective as a tool to slow population growth, selective removals which were effective in capturing 80-100% of the animals would be needed. This would assure enough mares were captured to allow for treatment and return to the HMA. HMAs near the high range of the AML would be the best candidates.
- Most veterinarians do not have experience with the surgical techniques used for spaying. A specialized team of personnel may be needed.
- Due to the varied foaling season of wild horses, spaying large numbers of mares could lead to higher mortality rates associated with the surgery, post-surgery complications, and abortion.
- The impacts of spayed mares on individual animal behavior, condition, herd size and social structure, and the affinity of spayed mares to a given geographic area are unknown. Monitoring to evaluate impacts to individual animal and the herd's social behavior and to determine the effectiveness of this approach as a tool to slow population growth would be necessary and involve additional costs.

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- Transporting mares to/from facilities for spaying would result in additional costs. Returning spayed animals to the range months later may make it more difficult for the mares to re-adjust to the herd and their environment.
- Mares held for any length of time in facilities would be exposed to infectious disease which could be carried back to the wild herd.

Timeframe:

At least 6 months would be needed to implement the necessary procedural and facility changes. There would also be a learning curve during which veterinarians and staff would need to develop their own technique and expertise to perform the surgery in a safe and efficient manner.

Completing the necessary site-specific environmental analysis (NEPA) would take 6-12 months at a minimum. Appeals or litigation could further extend this timeframe.

Once spayed mares were returned to the range, it would be 3-5 years before one might see significant returns from reduction of population growth rates and impacts on the overall population.

Costs:

The laparoscopic method is the most expensive form of spaying mares. Using this type of advanced equipment would cost approximately \$1,500-\$2,000 per procedure. A one-time investment of \$40,000 would be needed to purchase the equipment. There would also be recurring costs to maintain/replace this equipment over time. The advanced nature of the equipment, re-design of chute systems, and the wild nature of the candidate mares may make this technique less feasible for implementation.

The vaginal spaying procedure using the ecraseur technique would be the most cost-effective. Estimated cost for this procedure would be \$300 dollars per mare, which includes anesthesia and hourly veterinary costs. This procedure would be the least invasive. Recovery time for mares treated with this procedure would require a recovery time of about 7-10 days to the animal has no internal bleeding or peritonitis.

The flank spaying method would be more invasive to the animal and require a longer recovery time due to the healing of sutures. This procedure would require about a 3 week recovery time. It would cost approximately \$300 per procedure.

Other costs that will be incurred relate to holding time. There may be several weeks to months holding time until a facility can verify candidates for spaying, perform the procedure, and return the animals to the range. At \$3.50 per animal per feed day, each month an animal is held will result in \$105 per animal additional feed day costs. It could cost a total of \$620 for each mare held 4 months before her return to the range. Included would be \$420 in feed day costs, \$300 for the ecraseur spaying procedure, and \$100 for vaccinations and Coggins tests.

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The cost to implement field spaying is difficult to address. A rough estimate would be an increase of \$100 per head in removal costs. This cost would include the possible purchase of additional equipment, increased holding times, and contractor support of field veterinarians (animal handling).

The cost associated with arranging for local veterinarians and/or contract veterinarians to perform spaying procedures in the field could be significant due to the time these individuals would need to commit to the effort could cost \$2,000 or more per day (\$200,000 for 100 days of work). A second contract veterinarian may be needed to support spaying operations since the program has two contractors under the National Gather Contract. This could further increase costs.

Benefits:

The spaying of mares is permanent and a 100% effective form of fertility control. Returning spayed mares to the range following a gather would decrease the number of fertile mares in the population and result in fewer foals born. This would be expected to extend the time between gathers and result in fewer animals removed and entering the National adoption pipeline or STH/LTH over the long-term.

The clearest benefit to field spaying is the short holding time needed before animals are returned to the range. It would also avoid potential to spread infectious disease into the wild herd following their release. Spayed mares would re-adjust to their natural environment/herd setting more quickly than mares held in facilities for an extended period of time.

The benefit of spaying animals in a facility relates to the ability of facility personnel and the on-site veterinarian to monitor and address the health and well-being of the animals in the facility. This would allow candidates for spaying to be identified and treated in a controlled situation.

Concerns:

The effect of spaying on individual animals and the herd's social behavior are unknown. Monitoring would be needed to determine impacts to individual and herd social behavior as well as to determine if spaying is an effective tool to slow population growth, extend the time needed between maintenance gathers, and reduce program cost.

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Implement Research and Use of SpayVac™

Introduction:

Population management would incorporate the experimental use of SpayVac™ in mares to reduce population growth rates. SpayVac™ is an experimental fertility control vaccine using porcine zona pellucida (PZP) antigens microencapsulated with liposome technology. A single vaccination of SpayVac™ may maintain a high level of contraception within wild horse mares for at least four years or may be permanent.

Assumptions:

- ❖ SpayVac™ could meet BLM's need for a single-dose, long-lasting fertility control vaccine.
- ❖ Use of SpayVac™ requires the ability to capture and treat a large enough proportion of the population to effectively control population growth (similar to that for use of PZP or GonaCon).
- ❖ The most significant cost associated with the use of SpayVac™ would be the time and money required to capture and vaccinate each mare.

Legal Authorities:

The 1971 Wild Free Roaming Horses and Burros Act, as amended, recognizes sterilization or fertility control as possible options for maintaining the number of horses on the range at the appropriate management level (AML).

Description:

Porcine zona pellucida (PZP) antigens in contraceptive vaccines such as SpayVac™ cause treated females to produce antibodies which prevent fertilization. SpayVac™ uses a unique means of delivering PZP antigens to the immune system through liposomes, which are microscopic, multi-layered vesicles. This liposome technology is responsible for the extraordinary efficacy of SpayVac™.

SpayVac™ could be administered when animals are captured. Targeted mares would be treated through a single injection while the mare is restrained within a squeeze chute. To avoid repeated treatments, which would have unknown effects on the animal, animals would be marked with freeze brands.

Pros:

- SpayVac™ is easy to handle and administer.
- A single vaccination with SpayVac™ has maintained a high level of contraception throughout the 4-year Nevada estray horse study.

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- The captive trial in Nevada showed 100% contraception in Year 1, 83% in Years 2 & 3 & 4 (Killian *et al.* in press 2008). This rate of efficacy exceeds previously reported efficacy rates for PZP use in wild horse mares.
- If proven to be permanent, SpayVac™ could be used to create non-reproducing herds of mares.

Cons:

- Effective use of SpayVac™ would require the ability to capture and treat a large enough proportion of the population to be able to control population growth (similar to use of PZP and GonaCon).
- There is no regulatory approval for the management or investigational use of SpayVac™ through EPA or FDA. The Researcher/developer would need to obtain written permission from EPA or FDA for its investigational use or a letter saying that isn't necessary.
- There is no SpayVac™ available for investigational use and no one is currently making it.
- If SpayVac™ proves to be permanent it could potentially threaten the genetic viability of the treated population by limiting the genetic contribution to fewer animals.
- Data is not available that describes the impact of SpayVac™ on the behavior and physical health of the mares.
- The most significant cost of using SpayVac™ would be associated with the time and money required to capture and vaccinate the mares.

Timeframe:

It may be several years before SpayVac™ is ready for field use on an experimental basis. An investigational approval or exemption needs to be obtained from the EPA to develop SpayVac for management use. The vaccine would also have to be brought into production again (about a one year waiting period). Additional research on the duration and long term effects of SpayVac would also be needed. These research trials could begin shortly after vaccine production resumes. Based on these projections, it will be about six years before SpayVac™ could be a usable management tool for fertility control in free-roaming populations of wild horses.

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Cost:

To date there is no projected dosage cost for SpayVac™ as there is no inventory available for use. Other than routine gather costs to capture additional animals for treatment, costs may be similar to the PZP-22 vaccine that BLM is currently using. Currently, the estimated cost to vaccinate a wild mare ranges from \$500 to \$1,000 if capture and marking are required. Outside of dosage costs, it is anticipated that

one study for the research and development of SpayVac™ would require approximately \$250,000 for lab and pens trials over a five year period.

Benefit:

Based on the Nevada estray horse trials (Killian *et al* in press 2008), SpayVac™ exhibits the ability to effectively reduce population growth in wild horses. If it proves to be permanent, it may also be a valuable tool for use on specific mares as individuals in non-reproducing herds.