United States Department of the Interior

Bureau of Land Management

Little Fish Lake Joint Management Area
Wild Horse Gather Plan
Draft
Environmental Assessment

DOI-BLM-NV-B020-2022-0030-EA

U.S. Department of the Interior
Bureau of Land Management
Battle Mountain District/Tonopah Field Office
1553 South Main St., P.O. Box 911
Tonopah, NV 89049

BLM

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1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental effects of the Proposed Action, which consists of gathering and removing excess wild horses from the Little Fish Lake Herd Management Area (HMA) along with population growth suppression methods. The gather and removal of excess wild horses from the U.S. Forest Service's (USFS) Little Fish Lake Wild Horse Territory (WHT) is also included in the Proposed Action. The Little Fish Lake WHT is managed in accordance with an Interagency Agreement between the BLM and the USFS as a Joint Management Area (JMA) and is included for informational purposes and cumulative impact analysis. Refer to Map 1 below, which displays the HMAs and WHT included within the JMA.

The wild horse gather plan would allow for an initial gather and follow-up in order to achieve and maintain Appropriate Management Levels (AMLs) and would continue fertility control management. This EA will assist the Bureau of Land Management (BLM) Tonopah Field Offices (TFO) and USFS Austin-Tonopah Ranger District (ATRD) in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any significant effects could result from the analyzed actions. Following the requirements of NEPA (40 CFR 1508.9 (a)), this EA describes the potential impacts of a No Action Alternative and the Proposed Action for the Little Fish Lake JMA. If the BLM and USFS determines that the Proposed Action for the JMA is not expected to have significant impacts a Finding of No Significant Impact (FONSI) would be issued, and a Decision Record would be prepared for each agency. If significant effects are anticipated, the BLM would prepare an Environmental Impact Statement.

This document conforms to the following documents:

- The Tonopah Resource Management Plan (RMP) and subsequent Record of Decision dated October 1997.
- Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (BLM 2015).
- Toiyabe National Forest Land and Resource Management Plan, as amended (LRMP) dated 1986.

1.1 Background

The project area includes both the BLM and U.S Forest Service portions of Little Fish Lake Valley. The Little Fish Lake HMA and WHT are located approximately 70 miles northeast of Tonopah in Nye County, Nevada, and primarily confined to the valley bottoms of the Little Fish Lake Valley. The Little Fish Lake JMA contains portions of the Monitor Range to the west and the Hot Creek Range to the east, and is bordered by the Seven Mile HMA to the north and the Stone Cabin HMA to the south. Table 1, below, displays the total acreage and established AML for the HMA and WHT that make up the JMA.

The proposed wild horse gathers of the Little Fish Lake HMA and WHT would be conducted in coordination and in conjunction between the Tonopah Field Office and Austin-Tonopah Ranger District, due to historic movement and continuing interchange of wild horses between the HMA (approximately 28,700 acres of private/public land) and the WHT (approximately 88,300 acres of private/public land) (See Map 1). The wild horses from Little Fish Lake HMA travel back and forth across the Little Fish Lake WHT boundary lines, mixing with the wild horses from the WHT. The population within the boundaries of these administrative areas can fluctuate depending on the seasonal movement of these wild horses.

Since the passage of the *Wild Free-Roaming Horses and Burros Act of 1971* (WFRHBA), management knowledge regarding wild horse population levels has increased. For example, it has been determined

that wild horses are capable of increasing their numbers by 15% to 25% annually, resulting in the doubling of wild horse populations about every 4 years (NRC 2013, Ransom et al. 2016). This has resulted in the BLM shifting program emphasis beyond just establishing AML and conducting wild horse gathers to include a variety of management actions that further facilitate the achievement and maintenance of viable and stable wild horse populations and a "thriving natural ecological balance". Management actions resulting from shifting program emphasis include increasing fertility control, adjusting sex ratios and collecting genetic baseline data to support genetic health assessments.

Further evidence of the shift in program emphasis beyond just establishing AML can be seen when examining the Standards and Guidelines for Wild Horse and Burro Management from the Mojave-Southern Great Basin and Northeastern Great Basin Resource Advisory Council (RAC) standards and guidelines for rangeland health (Section 1.0 of the Supplemental Information document). Under the RAC, guidelines for the Wild Horses and Burros Standard guideline 4.7 which states: "Wild horse and burro herd management practices should address improvement beyond this standard, significant progress toward achieving standards, time necessary for recovery, and time necessary for predicting trends".

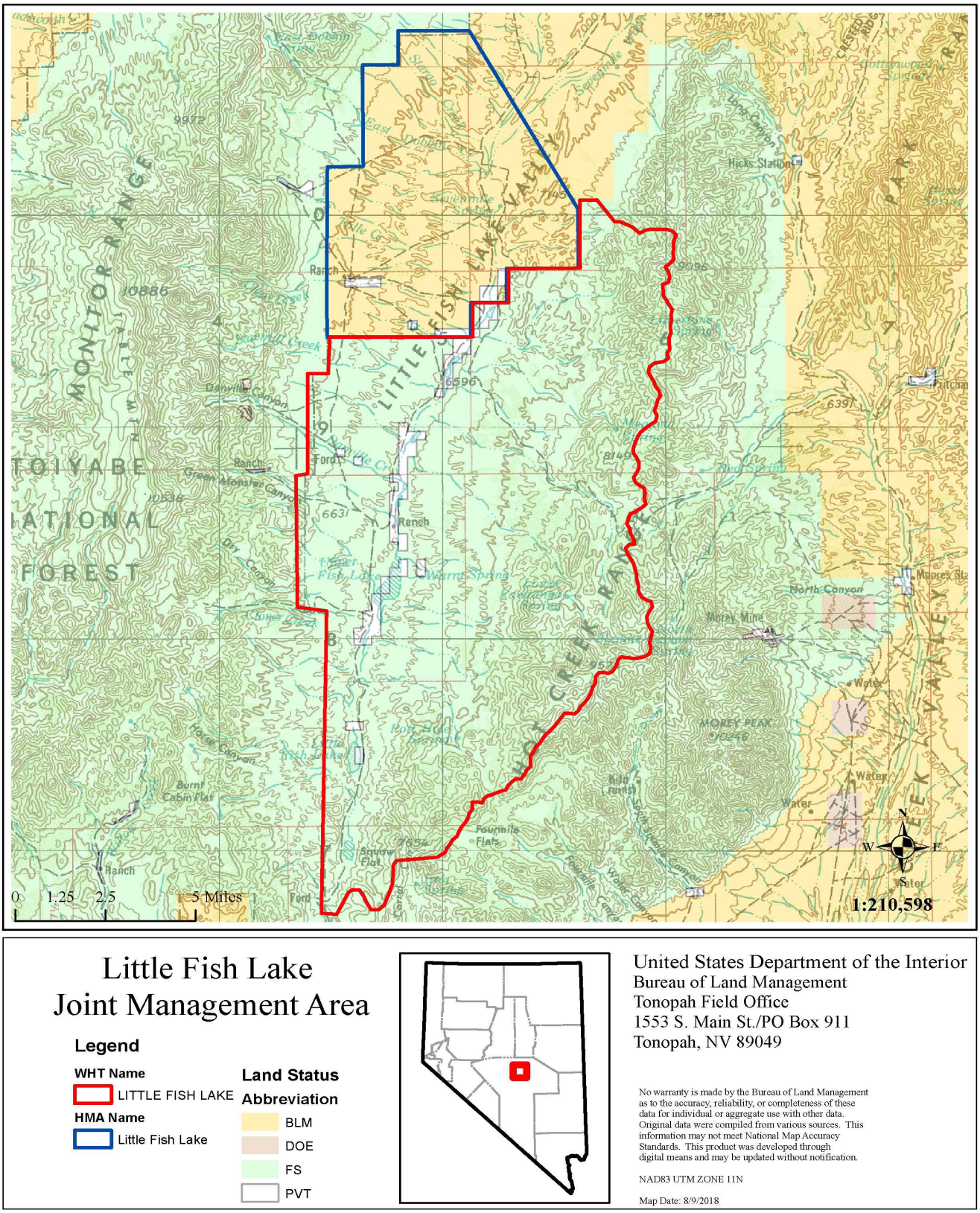
The AML is defined as the number of wild horses that can be sustained within a designated HMA which achieves and maintains a thriving natural ecological balance[1] in keeping with the multiple-use management concept for the area. The Little Fish Lake AML of 132 wild horses was established through a stipulated agreement (Consent Decision) between BLM, E. Wayne Hage, Colvin and Son Cattle Co., and Russell Ranches through the Department of the Interior Office of Hearings and Appeals, Hearings. That agreement established an AML for the Allotment of 132 wild horses. The Allotment was divided in 1989 and a portion of those lands were transferred to USFS and the AML was divided accordingly to reflect an AML of 93 horses for the USFS lands and 39 horses for the BLM-managed lands. The 1997 Tonopah RMP and Record of Decision confirmed that an AML of 39 horses remains appropriate for the portion of land that remains under the jurisdiction of the BLM.

Although the Little Fish Lake JMA AML was established as a single number, which is the maximum herd size, removal to a lower number is provided for in the RMP in order to allow for up to three years of population growth without exceeding the AML between gathers. Therefore, "Low AML[2]" for the JMA, as it is referenced in this document, refers to that lower number which allows up to 3 years of population growth based on the resulting population growth rate from the chosen management action alternative.

[1] The Interior Board of Land Appeals (IBLA) defined the goal for managing wild horse (or burro) populations in a thriving natural ecological balance as follows: "As the court stated in Dahl v. Clark, supra at 594, the 'benchmark test' for determining the suitable number of wild horses on the public range is 'thriving ecological balance.' In the words of the conference committee which adopted this standard: 'The goal of WH&B management ***should be to maintain a thriving ecological balance between WH&B populations, wildlife, livestock and vegetation, and to protect the range from the deterioration associated with overpopulation of wild horses and burros.' " (Animal Protection Institute of America v. Nevada BLM, 109 IBLA 115, 1989).

[2] The Tonopah Resource Management Plan and Record of Decision of 1997 determined that "When the appropriate management level*** is exceeded, remove wild horses and/or burros to a point which may allow up to three years of population increase before again reaching the appropriate management level...". Because management actions can alter the rate of population growth, the actual number for "low AML" for the JMA may vary. For example, under the Proposed Action (alternative A), a reduced growth rate would be expected following the application of fertility control measures, so a larger number of animals could remain on the JMA post gather without risk of exceeding AML. In contrast, the gather and removals only alternative (Alternative B) would require fewer animals to remain on the JMA due to the fact that the population would continue to increase at a normal rate of 15-25%.

The Tonopah RMP stated that adjustments to AML would be based on monitoring and grazing allotment evaluations. A Rangeland Health Evaluation is currently scheduled for the grazing allotments associated with the Little Fish Lake HMA. At present, historical monitoring data, and current monitoring data do not indicate that an increase or decrease of the existing AML is warranted. However, achieving and maintaining AML is critical for the conservation of rangeland resources and healthy wild horses.



Map 1. Little Fish Lake Joint Management Area.

Table 1. Joint Management Area, Acres, AML, Estimated Population, minimum number for removal to reach low AML under the Proposed Action (Alternative A).

Herd	Total Acres Private/Public land	Appropriate Management Level	2021 Estimated Population	2022 Estimated population	Removal to Achieve Low AML[3]
Little Fish Lake HMA	28,744	39	138	166	74
Little Fish Lake WHT	88,297	93	153	184	177
Total	117,041	132	291	350	251

An aerial survey of the project area was conducted in March of 2021. The survey adhered to US Geological Survey (USGS) Standard Operating Procedures for double-observer aerial surveys (Griffin et al. 2020). During that survey, observers recorded 242 adult wild horses. This number was the 'direct count' of every horse seen on the flight and does not account for unseen horses that were present in the project area. Thus, the actual number of wild horses in the surveyed area in March 2021 was some number that is larger than 242. In Table 1, the expected herd size for March of 2021 is based on the observed direct count from the survey with the addition of a 20% annual herd growth rate. The estimated population size for 2022 reported in Table 1 is from the 2021 estimate plus the addition of a 20% annual herd growth rate to include the 2022 foal crop.

There is currently no Herd Management Area Plan (HMAP) in place for the Little Fish Lake HMA. The Interior Board of Land Appeals has held that an HMAP is not a prerequisite to BLM conducting a gather operation (Animal Protection Institute of America, 109 IBLA 112, 127 (1989)), so long as the record otherwise substantiates compliance with the WFRHBA. Based on all available information, BLM has determined under the WFRHBA that excess wild horses are present and that a gather for removal of excess animals and application of population control measures is necessary to achieve a thriving natural ecological balance. While BLM has not prepared a formal HMAP document, the major components of an HMAP have nonetheless been addressed by BLM, including the establishment of the HMA, AML and objectives for managing the JMA (through the Tonopah RMP and other decision documents), monitoring and evaluating whether management objectives are being met (as summarized in this NEPA document), and establishing a ten-year management plan (through the Proposed Action and Alternatives being analyzed). The BLM is also providing an opportunity for public participation through the comment period for this EA.

Based upon all current information available at this time, the BLM has determined that at least 189 excess wild horses above the low end of AML exist within the Little Fish Lake JMA. These excess wild horses need to be removed in order to achieve the established AML, restore a thriving natural ecological balance (TNEB) and prevent further degradation of rangeland resources. This assessment is based on factors including, but not limited to the following rationale:

- Little Fish Lake JMA estimated populations exceed the established AML range for the project area (Table 1).
- Excess wild horses are impacting/damaging private lands within the JMA.
- Moderate, heavy and severe utilization is evident on key forage species within JMA.
- Use by wild horses has caused riparian resource damage at Sevenmile Spring, Clear Creek, and Anderson Field.

[3] As more fully described in the Proposed Action, this number is based on current population counts/estimates. The wild horse population increases each year due to the new foal crop, so the number of horses gathered and removed will likely be higher depending on when the gather takes place.

- Monitoring and historical information indicate that future emergency removals would be necessary due to lack of water and/or forage if gathers are not conducted to reduce the population to AML.
- Animals Leaving the JMA boundary and remaining outside of HMAs/WHTs

1.2 Purpose and Need

The purpose of the Proposed Action is to gather and remove excess wild horses from within and outside the Little Fish Lake JMA. The current wild horse population in the JMA exceeds the Appropriate Management Level by over 250 animals and is growing by 15-25% annually. The excess horses in the JMA are impacting vegetation condition, wildlife habitat, and water quality. There is a need to reduce wild horse populations growth rates in the JMA and maintain the population at or below the established AML..

The need for the action is to prevent undue or unnecessary degradation of the public lands and national forest system lands associated with excess wild horses, and to restore a TNEB and multiple-use relationship on public lands, consistent with the provisions of Section 1333(b) of the WFRHBA. The action would also limit the impacts to private property located in the JMA.

1.3 Land Use Plan Conformance and Consistency with Other Authorities

The Action Alternatives are in conformance with the Wild Horse and Burro Objectives of the Tonopah RMP Record of Decision dated 1997. Pertinent excerpts from that document are the following:

Objective: To manage wild horse and/or burro populations within Herd Management Areas at levels which will preserve and maintain a TNEB consistent with other multiple-use objectives (page 14).

1. Continue the following management determinations:
   a. Manage wild horses and/or burros in 16 HMAs listed in Table 3 of the RMP.
   b. Manage wild horses and/or burros at AML or interim herd size (IHS) for each HMA outlined in Table 3. Future herd size or AMLs within each HMA will be adjusted as determined through short-term and long-term monitoring data methods as outlined in the *Nevada Rangeland Monitoring Handbook* and BLM Technical References.
2. When the AML is exceeded, remove excess wild horses and/or burros to a point which may allow up to three years of population increase before again reaching the AML.

   Within the 1997 RMP the definition of AML is given as "*the maximum number of wild horses and/or burros to be managed within a herd management area and has been set through monitoring and evaluation or court order*" (page 15).

Direction on Consistency with Toiyabe National Forest Land and Resource Management Plan, As Amended

The National Forest and Public Lands Enhancement Act of 1988 (P.L. 100-550) transferred approximately 750,000 acres of BLM public lands into the National Forest System on the Toiyabe National Forest, which resulted in the Forest Service assuming management responsibility for large portions of the original Little Fish Lake HMA.

The Little Fish Lake WHT is managed under the *1986 Toiyabe National Forest Land and Resource Management Plan, as amended.* Projects that take place on National Forest System lands are guided by the desired conditions, goals, objectives, management direction, and standards and guidelines set out in the Forest Plan. Key management direction from the Forest Plan related to wild horse and burro management is summarized below.

The Toiyabe Forest Plan at page IV-4 describes how it is the desired condition that management plans will have been approved for all wild and free-roaming horse and burro territories and that wild horse and burro use will have been maintained at pre-existing levels. The plan also provides that the Forest should manage wild free-roaming horses and burros to population levels compatible with resource capabilities and requirements (IV-31).

Wild Free-Roaming Horse and Burros (p. IV-31)
1- Manage wild free-roaming horses and burros in accordance with the Wild Free-Roaming Horse and Burro Act of 1971
2- Carry out interagency agreements with the Inyo National Forest and the BLM
3- Involve interested federal and state agencies and other groups in the management of wild free-roaming horses and burros
4- Manage wild free-roaming horses and burros to population levels compatible with resource capabilities and requirements

Management Area 10 – Monitor
The Forest Plan divides NFS lands in Central Nevada into five sub-units called management areas (MAs). Each Management Area has resource or activity goals and management standards for managing areas in particular ways under management area prescriptions. Specific standards and guidelines for management areas apply in addition to any relevant forest-wide direction. The Little Fish Lake WHT occurs in the Monitor Management Area. Monitor Management Area 10 direction relevant to the project includes (Pages IV-134-137):

- A healthy, diverse wildlife habitat will be provided with emphasis on deer, elk, and upland birds, while also emphasizing livestock grazing. Management will provide for requirements of wild horses.
- Key habitats will be maintained and improved through management of wild horses and livestock. Wildlife habitat improvement projects will be conducted in keyareas such as riparian habitat.
- Wild horse herds will be managed cooperatively with the BLM to providesufficient forage and water for wildlife and domestic livestock, and tomaintain soil and vegetat1on in satisfactory condition. Noxious farm weeds will be controlled.

Greater Sage-Grouse LRMP Amendment #17
On September 16, 2015, the Intermountain Regional Forester signed the Record of Decision (ROD) for the Greater Sage-Grouse Forest Plan Amendment. This ROD amended the Toiyabe Land and Resource Management Plan to include updated management direction designed to conserve, enhance and restore Greater Sage-Grouse habitat. Direction specific to the management of wild horses and burros includes:

GRSG-HB-DC-067-Desired Condition – In priority and general habitat management areas, wild horse and burro populations are within established appropriate management levels.

GRSG-HB-ST-068-Standard – In priority and general habitat management areas, consider adjusting appropriate management levels, consistent with applicable law, if greater sage-grouse management standards are not met due to degradation that can be at least partially attributed to wild horse or burro populations.

GRSG-HB-ST-069-Standard – In priority and general management areas, remove wild horses and burros outside of a wild horse and burro territory.

GRSG-HB-GL-070-Guideline – In priority and general habitat, herd gathering should be prioritized when wild horse and burro populations exceed the upper limit of the established appropriate management level.

GRSG-HB-GL-071-Guideline – In priority and general habitat, wild horse and burro population levels should be managed at the lower limit of established appropriate management level ranges, as appropriate.

1.4 Relationship to Statutes, Regulations, or other Plans

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

The Proposed Action is also consistent with the WFRHBA of 1971, which mandates the Bureau to "*prevent the range from deterioration associated with overpopulation*", and "*remove excess horses in order to preserve and maintain a thriving natural ecological balance and multiple use relationships in that area".*

Also the WFRHBA of 1971 sec 1333 (b)(1) states: "*The purpose of such inventory shall be to: make determinations as to whether and where an overpopulation exists and whether action should be taken to remove excess animals; determine appropriate management levels or wild free-roaming horses and burros on these areas of public land; and determine whether appropriate managements should be achieved by the removal or destruction of excess animals, or other options (such as sterilization, or natural control on population levels)*."

The Proposed Action is consistent with all applicable at laws and regulations at Title 43 Code of Federal Regulations (43 CFR) 4700 and policies.

43 CFR 4700.0-6 (a) Wild horses shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat (emphasis added).

43 CFR 4710.4 Management of wild horses and burros shall be undertaken with the objective of limiting the animals' distribution to herd areas. Management shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management area plans.

43 CFR 4720.1 Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately….

43 CFR 4720.2 Upon written request from a private landowner……the Authorized Officer shall remove stray wild horses and burros from private lands as soon as practicable.
43 CFR 4740.1 (a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All such use shall be conducted in a humane manner. (b) Before using helicopters or motor vehicles in the management of wild horses or burros, the authorized officer shall conduct a public hearing in the area where such use is to be

made.

The Interior Board of Land Appeals (IBLA) in Animal Protection Institute et al., (118 IBLA 63, 75 (1991)) found that under the WFRHBA of 1971 (Public Law 92-195) BLM is not required to wait until the range has sustained resource damage to reduce the size of the herd, instead proper range management dictates removal of "excess animals" before range conditions deteriorate in order to preserve and maintain a TNEB and multiple-use relationship in that area.

References to the CEQ regulations throughout this EA are to the regulations in effect prior to September 14, 2020. The revised CEQ regulations effective September 14, 2020 are not referred to in this EA because the NEPA process associated with the proposed action began prior to this date.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 Introduction:

This chapter of the EA describes the Proposed Action and Alternatives, including any that were considered but eliminated from detailed analysis. Alternatives analyzed in detail include the following:

- **Proposed Action (Alternative A).** Over a 10-year period, use gathers to remove excess animals in order to achieve low AML, adjust sex ratio in favor of males, apply fertility control methods (vaccines and/or IUDs) to released mares, and maintain population at AML if after low AML has been achieved, population growth results in the AML being exceeded again.
- **Alternative B.** Under Alternative B, Gather and remove excess animals to within the AML range without fertility control.
- **No Action Alternative.** Under the No Action Alternative, a gather to remove excess wild horses would not occur. There would be no active management to control population growth rates, the size of the wild horse population or to bring the wild horse population to AML.

2.2 Alternative A: Proposed Action Alternative

2.2.1 Population Management

The Proposed Action (Alternative A) would involve three distinct types of activities over the 10-year life of the plan:

1. Initially, gather and remove excess wild horses to achieve low AML either in a single first gather or over multiple phased gathers, depending on BLM national priorities, resources, and off-range corral space availability.
2. Administer and/or booster population control measures to gathered and released horses, as well as sex ratio adjustment, to slow population growth and maintain the wild horse population within AML.
3. Conduct additional/maintenance gathers after the initial gather(s) to bring wild horse population back to low AML if the population grows to again exceed AML during the 10-year plan life after low AML was achieved.

At the current population, if a single gather were to be immediately implemented to reach low AML, the BLM would gather and remove approximately 251 excess wild horses within the JMA. However, the wild horse population grows each year and if an initial gather is delayed, or if multiple gathers are necessary to achieve low AML, the number of excess wild horses needing gather and removal to achieve low AML would be higher. All three components of the Proposed Action would allow BLM to achieve management goals and objectives of attaining a herd size that will not exceed AMLTNEB on the range as identified within the WFRHBA.

It is expected that gather efficiencies and off-range corral space availability may not allow for the attainment of low AML[4] during a single initial gather (i.e., not enough horses are successfully captured and removed to reach low AML). If low AML is not achieved with the first gather, the BLM Tonopah Field Office as well as the Humboldt-Toiyabe National Forest Austin-Tonopah Ranger District would return to the JMA to remove remaining excess horses above low AML in one or more follow-up gathers. Follow-up gathers would continue over a 10-year period to remove additional excess wild horses necessary to achieve and maintain AML in order to provide the opportunity and enough time for degraded range resources to recover, and to gather a sufficient number of wild horses as to implement the population control component of the Proposed Action, which includes sex ratio adjustment (60% males/ 40% females) and fertility control treatments (PZP vaccines, GonaCon, IUDs) for wild horses remaining in the JMA. Prioritization of excess wild horse removals would be as follows: from areas where public health and safety issues have been identified, private land and non-JMA, areas where resource degradation/deficiency has been identified, and within JMA areas as needed to reach and maintain AML. Selective removal procedures would prioritize removal of younger excess wild horses after achieving AML within the JMA, and allow older, less adoptable, wild horses to be released back to the JMA. BLM would begin implementing the population control components (PZP vaccines, GonaCon, IUDs) of this alternative as part of the initial gather. To help improve the efficacy and duration of fertility control vaccines, mares could be held for an additional 30 days and given a booster shot prior to release.

Population inventories and routine resource/habitat monitoring would continue to be completed every two to three years to document current population levels, growth rates, and areas of continued resource concerns (horse concentrations, riparian impacts, over-utilization, etc.). Funding limitations and competing national priorities may impact the timing and ability to gather and conduct population control components of the Proposed Action.

The management objective for the Little Fish Lake JMA is to achieve and maintain AML over the 10-year plan period. BLM would achieve this through gather and removal of excess animals along with use of population growth suppression measures that include:

- Administration of fertility control measures (i.e., PZP vaccines, GonaCon or newly developed vaccine formulations, IUDs) to released mares.
- Adjustment of sex ratio to favor males

The fertility control component of the Proposed Action would reduce the total number of wild horses that would otherwise be permanently removed from the range over time. Primary gather methods would include helicopter drive, bait, and water trapping. It is expected that not all horses would be able to be captured, as gather efficiencies rarely exceed 80-85%. As a result, a proportion of wild horses (15-20%+) in the project area would not be captured or treated over the 10-year period of the Proposed Action.

While in the temporary holding corral horses would be identified for removal or release based on age, gender and/or other characteristics. As a part of periodic sampling to monitor wild horse genetic diversity in the JMA, hair follicle samples would be collected from a minimum of 25 horses of the released population. Samples would be collected for analysis to assess the levels of observed heterozygosity, which is a measure of genetic diversity (BLM 2010), within the JMA and may be analyzed to determine

[4] Although there is no AML range (with a low and high end of AML) established for the JMA, low AML referred to here and throughout the document is the number which allows for up to three years of population growth before exceeding the set AML.

relatedness to established breeds and other wild horse herds. Mares identified for release would be aged, microchipped and freeze-marked for identification prior to being released to help identify the animals for future treatments/boosters and assess the efficacy of fertility control treatments.

2.2.2. Population Growth Suppression Methods

The Proposed Action would include population growth suppression methods such as fertility control vaccines, IUDs, and sex ratio adjustments to 60% males. In cases where a booster vaccine is required, mares could be held for approximately 30 days and given a booster shot prior to release. Over the course of multiple gathers over the 10-year time period, BLM would treat/retreat mares with fertility control to help meet herd management objectives. The use of any new fertility control method would conform to current best management practices at the direction of the National Wild Horse and Burro Program.

All mares that are trapped and selected for release would be treated with fertility control treatments (PZP vaccines [ZonaStat-H, PZP-22], GonaCon or most current formulation, IUDs) to prevent pregnancy in the following year(s). Detailed analysis on population growth suppression methods is discussed further in Section 8.0 of the Supplemental Information document.

2.2.2.1. PZP

Porcine Zona Pellucida (PZP) Vaccine

Immunocontraceptive Porcine Zona Pellucida (PZP) vaccines are currently being used on over 75 areas managed for wild horses by the National Park Service, US Forest Service, and the BLM and its use is appropriate for free-ranging wild horse herds. Taking into consideration available literature on the subject, the National Research Council concluded in their 2013 report that PZP vaccine was one of the preferred available methods for contraception in wild horses and burros (NRC 2013). PZP vaccine use can reduce or eliminate the need for gathers and removals (Turner et al. 1997). PZP vaccines meet most of the criteria that the National Research Council (2013) used to identify promising fertility control methods, in terms of delivery method, availability, efficacy, and side effects. It has been used extensively in wild horses (NRC 2013), and in a population of feral burros in territory of the US (Turner et al. 1996). PZP vaccine can be relatively inexpensive, meets BLM requirements for safety to mares and the environment, and is commercially produced as ZonaStat-H, an EPA-registered product (EPA 2012, SCC 2015), or as PZP-22, which is a formulation of PZP in polymer pellets that can lead to a longer immune response (Turner et al. 2002, Rutberg et al. 2017, Carey et al. 2019). It can easily be remotely administered (dart-delivered) in the field, but typically, only where mares are relatively approachable.

Under the Proposed Action, mares being treated for the first time would receive a liquid primer dose along with time release pellets (“PZP-22”). BLM would return to the JMA as needed to re-apply PZP-22 and/or ZonaStat-H and initiate new treatments in order to maintain contraceptive effectiveness in controlling population growth rates. Application methods could be by hand in a working chute during gathers, or through field darting if mares in some portions of the JMA prove to be approachable. Both forms of PZP can safely be reapplied as necessary to control the population growth rate. Even with repeated booster treatments of PZP, it is expected that most, if not all, mares would return to fertility, and not all mares would be treated or receive boosters within the JMA due to the size of the population, the large size of the JMA, gather efficiencies and logistics of wild horse gathers. Once the population is at AML and population growth seems to be stabilized, BLM could use population planning software (PopEquus, currently in development by USGS Fort Collins Science Center) to determine the required frequency of re-treating mares with PZP or other fertility control methods.

2.2.2.2. Gonadotropin Releasing Hormone (GnRH) Vaccine, GonaCon

Registration and safety of GonaCon-Equine
The immune-contraceptive GonaCon-Equine vaccine meets most of the criteria that the National Research Council of the National Academy of Sciences (NRC 2013) used to identify the most promising fertility control methods, in terms of delivery method, availability, efficacy, and side effects. GonaCon-Equine is approved for use by authorized federal, state, tribal, public and private personnel, for application to wild and feral equids in the United States (EPA 2013, 2015). Its use is appropriate for free-ranging wild horse herds. Taking into consideration available literature on the subject, the National Research Council concluded in their 2013 report that GonaCon-B (which is produced under the trade name GonaCon-Equine for use in feral horses and burros) was one of the most preferable available methods for contraception in wild horses and burros (NRC 2013). GonaCon-Equine has been used on feral horses in Theodore Roosevelt National Park (Baker et al. 2018) and over the past xx years, has also been applied to an increasing number of BLM-managed wild horses in over xx HMAs throughout the west. GonaCon-Equine can be remotely administered in the field in cases where mares are relatively approachable, using a customized pneumatic dart (McCann et al. 2017). Use of remotely delivered (dart-delivered) vaccine is generally limited to populations where individual animals can be accurately identified and repeatedly approached within 50 meters or less (BLM 2010).

As with other contraceptives applied to wild horses, the long-term goal of GonaCon-Equine use is to reduce or eliminate the need for gathers and removals (NRC 2013). GonaCon-Equine vaccine is an EPA-approved pesticide (EPA, 2009a) that is relatively inexpensive, meets BLM requirements for safety to mares and the environment, and is produced in a USDA-APHIS laboratory. Its categorization as a pesticide is consistent with regulatory framework for controlling overpopulated vertebrate animals, and in no way is meant to convey that the vaccine is lethal; the intended effect of the vaccine is as a contraceptive. GonaCon is produced as a pharmaceutical-grade vaccine, including aseptic manufacturing technique to deliver a sterile vaccine product (Miller et al. 2013). If stored at 4° C, the shelf life is 6 months (Miller et al 2013).

Miller et al. (2013) reviewed the vaccine environmental safety and toxicity. When advisories on the product label (EPA 2015) are followed, the product is safe for users and the environment (EPA 2009b). EPA waived a number of tests prior to registering the vaccine, because GonaCon was deemed to pose low risks to the environment, so long as the product label is followed (Wang-Cahill et al. in press).

Under the Proposed Action, the BLM would return to the JMA as needed to re-apply GonaCon-Equine and initiate new treatments in order to maintain contraceptive effectiveness in controlling population growth rates. Booster dose effects may lead to increased effectiveness of contraception (Baker et al. 2018), which is generally the intent. GonaCon-Equine can safely be reapplied as necessary to control the population growth rate. Even with one booster treatment of GonaCon-Equine, it is expected that most, if not all, mares would return to fertility at some point, although the average duration of effect after booster doses has not yet been quantified. It is unknown what would be the expected rate for the return to fertility rate in mares boosted more than once with GonaCon-Equine. Once the herd size in the project area is at AML and population growth seems to be stabilized, BLM would make a determination as to the required frequency of new mare treatments and mare re-treatments with GonaCon or other fertility control methods, to maintain the number of horses within AML.

2.2.2.3. Intrauterine Devices (IUDs)
IUDs are considered a temporary fertility control method that does not generally cause future sterility (Daels and Hughes, 1995). It is expected that IUDs would only be inserted in non-pregnant (open) mares. Wild mares receiving IUDs would be checked for pregnancy prior to insertion of an IUD. BLM has used IUDs to control wild horse fertility in management applications in Utah and Wyoming. The BLM has

supported and continues to support research into the development and testing of effective and safe IUDs for use in wild horse mares (Baldrighi et al., 2017, Holyoak et al., 2021). However, existing literature on the use of IUDs in horses allows for inferences about expected effects of any management alternatives that might include use of IUDs and supports the apparent safety and efficacy of some types of IUDs for use in horses (Section 8.0 of the Supplemental Information document).

Soft IUDs may cause relatively less discomfort than hard IUDs (Daels and Hughes, 1995). The 2013 National Academies of Sciences (NAS) report considered IUDs and suggested that research should test whether IUDs cause uterine inflammation and should also test how well IUDs stay in mares that live and breed with fertile stallions. Since that report, researchers tested a Y-shaped IUD to determine retention rates and assess effects on uterine health; retention rates were greater than 75% for an 18-month period, and mares returned to good uterine health and reproductive capacity after removal of the IUDs (Holyoak et al., 2021). Also, the University of Massachusetts has developed a magnetic IUD that has been effective at preventing estrus in non-breeding domestic mares (Gradil et al., 2019). The overall results are consistent with results from an earlier study (Daels and Hughes, 1995), which used O-shaped silicone IUDs.

2.3 Alternative B

Under this alternative, BLM would gather and remove excess animals to within AML range without fertility control treatments. Impacts from this alternative would be similar to the gathering and handling impacts under the Proposed Action. Gathers conducted under Alternative B could be completed as gate-cut gathers where only enough horses are gathered and removed to achieve the AML goal, or as selective removal where removal criteria such as age and conformation could be utilized to choose which horses are to be released in order to improve wild horse health and characteristics and remove only adoptable horses while releasing the older horses back to the range.

2.4 Management Actions Common to Alternatives A, and B

Gathering of horses and removal of excess wild horses to achieve and maintain the AML would occur as necessary for the next 10 years following the start date of the initial gather. All gather and handling activities would be conducted in accordance with the Comprehensive Animal Welfare Program (CAWP) in Section 4.0 of the Supplemental Information document and SOPs in Section 5.0 of the Supplemental Information document.

The primary gather techniques would be the helicopter-drive and water/bait trapping. The use of roping from horseback could also be used when necessary. Multiple, temporary gather sites (traps) would be used to gather wild horses both from within and outside the JMA. In addition to public lands, private property may be utilized for gather sites and temporary holding facilities (with the landowner's permission) if necessary, to ensure accessibility and/or based on prior disturbance. Use of private land would be subject to Standard Operating Procedures (SOPs) (Section 5.0 of the Supplemental Information document) and to the written approval/authorization of the landowner.

Any trapping activities would be scheduled in locations and during time periods that would be most effective to gather sufficient numbers of animals to achieve management goals for the areas being gathered. The most efficient gather technique would be chosen as determined by the gather needs of the specific area.

Temporary gather and holding sites would be no larger than 0.5 acres. Bait or water trapping sites could remain in place up to one year. Temporary holding sites could be in place for up to 45 days depending on length of gather. The exact location of the gather sites and holding sites may not be determined until immediately prior to the gather because the location of the animals on the landscape is variable and

unpredictable.

The BLM would make every effort to place gather sites in previously disturbed areas, but if a new site needs to be used, a cultural inventory would be completed prior to using the new gather site. If cultural resources are encountered, the location of the gather/ holding site would be adjusted to avoid all cultural resources.

No gather sites would be set up on Greater sage-grouse leks, known populations of sensitive species, in riparian areas, in cultural resource sites, sacred sites, paleontological sites, Wilderness Study Areas (WSAs) or congressionally designated Wilderness Areas. All gather sites, holding facilities, and camping areas on public lands would be recorded with Global Positioning System equipment, given to the BLM Battle Mountain Non-native Weed Coordinator, and then assigned for monitoring and any necessary treatment during the next several years for invasive, non-native weeds. All gather and handling activities (including gather site selections) would be conducted in accordance with SOPs in Section 5.0 of the Supplemental Information document.

Activities in listed species habitat would be subject to Section 7 consultation under the Endangered Species Act with the level of consultation to be determined based upon the project site-specific proposed action. BLM would complete consultation prior to implementation of any specific action which may have an effect on a listed species.

Wildlife Stipulations (Common to all Alternatives, except No Action Alternative)

- If gather operations were to be conducted during the migratory bird breeding season (March 1 – July 31) a nest clearance survey would be conducted by BLM Biologist at trap, corral, and staging areas.
- Trap sites and corrals would not be located in active pygmy rabbit habitat or other sensitive habitat.
- Corrals would not be constructed within 1 mile of an active or pending lek.
- Prior to gathers, BLM would coordinate with the Nevada Department of Wildlife (NDOW) regarding locations of staging areas to address Greater sage-grouse concerns. The following timing restrictions would be adhered to the best of BLM's abilities while not impeding gather operations:
    - Helicopter and water trapping gather would not occur during the lek timing restriction of March 1 – May 15 to protect breeding Greater sage-grouse.
    - Helicopter gathers would not occur during the nesting timing restriction of April 1 – June 30 within 4 miles of an active or pending lek.
    - Water trapping operations would not occur during nesting timing restriction April 1 – June 30 within 1 mile of an active or pending lek.
    - Water trapping operations would not occur at springs and seeps during brood-rearing timing restriction of May 1 – September 15 if determined by the BLM wildlife biologist the locations are considered Greater sage-grouse brood habitat.

2.4.1. Helicopter Drive Trapping

The BLM would utilize a contractor to perform the gather activities in cooperation with the BLM. The contractor would be required to conduct all helicopter operations in a safe manner and in compliance with Federal Aviation Administration (FAA) regulations 14 CFR § 91.119, WO.

Per BLM IM 2013-059 and BLM IM 2010-164 helicopter landings would not be allowed in wilderness except in the case of an emergency.

Helicopter-drive trapping may be needed to meet management objectives to capture the highest percentage of wild horses possible. The appropriate gather method would be decided by the Wild Horse and Burro Specialist based on the location, accessibility of the animals, local terrain, vegetative cover, and available sources of water and forage. The use of roping from horseback could also be used when necessary. Based on wild horse watering locations in this area, it is estimated that multiple trap sites may be used during trapping activities.

Helicopter drive trapping involves use of a helicopter to herd wild horses into a temporary trap. The SOPs outlined in Section 5.0 of the Supplemental Information document, as well as standards set by the Comprehensive Animal Welfare Program (CAWP) outlined in Section 4.0 of the Supplemental Information document, would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impacts or injury to the wild horses. Utilizing the topography, traps would be set in areas with high probability of horse access. This would assist with capturing excess wild horses residing nearby. Traps consist of a large catch pen with several connected holding corrals, jute-covered wings and a loading chute. The jute covered wings are made of fibrous material, not wire, to avoid injury to the horses. The wings form an alley way used to guide the horses into the trap. Trap locations are changed during the gather to reduce the distance that the animals must travel. A helicopter is used to locate and herd wild horses to the trap location. The pilot uses a pressure and release system while guiding them to the trap site, allowing them to travel at their own pace. As the herd approaches the trap the pilot applies pressure and a prada horse is released guiding the wild horses into the trap. Once horses are gathered, they are removed from the trap and transported to a temporary holding facility where they are sorted.

During helicopter drive-trapping operations, BLM would assure that an Animal and Plant Health Inspection Service (APHIS) veterinarian or contracted licensed veterinarian is on-site or on call to examine animals and make recommendations to BLM for care and treatment of wild horses. BLM staff would be present on the gather at all times to observe animal condition, ensure humane treatment of wild horses, and ensure contract requirements are met.

2.4.2. Bait/Water Trapping

Bait and/or water trapping would be used as appropriate to gather wild horses efficiently and effectively. Bait and water trapping may be utilized, when wild horses are in an area where there are limited resources (such as food or water). The use of bait and water trapping, though effective in specific areas and circumstances, would not be timely, cost-effective or practical as the primary or sole gather method for the JMA. However, water or bait trapping could be used as a supplementary approach to achieve the desired goals of Alternatives A-B throughout portions of the JMA. Bait and/or water trapping generally require a longer window of time for success than helicopter drive trapping. Although the trap would be set in a high probability area for capturing excess wild horses residing within the area and at the most effective time periods, time is required for the horses to acclimate to the trap and/or decide to access the water/bait.

Trapping involves setting up portable panels around an existing water source or in an active wild horse area, or around a pre-set water or bait source. The portable panels would be set up to allow wild horses to go freely in and out of the corral until they have adjusted to it. When the wild horses fully adapt to the corral, it is fitted with a gate system. The adaptation of the horses creates a low stress trapping method. During this acclimation period the horses would experience some stress due to the panels being setup and perceived access restriction to the water/bait source. See Supplemental Information document, Section 5.0.

Gathering excess horses using bait/water trapping could occur at any time of the year and traps would

remain in place until the target numbers of animals are removed. As the proposed bait and/or water trapping in this area is a lower stress approach to gathering wild horses, such trapping can continue into the foaling season without harming the mares or foals.

2.4.3. Gather-related Temporary Holding Facilities (Corrals)

Wild horses that are gathered would be transported from the gather sites to a temporary holding corral. At the temporary holding corral wild horses would be sorted into different pens. Mares would be identified for fertility control and treated at the corrals. The horses would be provided good quality hay and water. At the temporary holding facility, a veterinarian, when present, would provide recommendations to the BLM regarding care and treatment of recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (AVMA).

Herd health and characteristics data would be collected as part of continued monitoring of the wild horse herds. Genetic baseline data would be collected to monitor the genetic health of the wild horses within the combined project area. Additional samples may be collected to analyze ancestry.

Gathered wild horses would be transported to BLM off-range corrals where they would be prepared for adoption and/or sale to qualified individuals or transfer to off-range pastures or other disposition authorized by the WFRHBA.

2.4.4. Transport, Off-range Corrals, and Adoption Preparation

All gathered wild horses would be removed and transported to BLM off range corrals (ORCs, formerly short-term holding facilities) where they would be inspected by facility staff (and if needed by a contract veterinarian) to observe health conditions and ensure that the animals are being humanely cared for. Wild horses removed from the range would be transported to the receiving ORC in a goose-neck stock trailer or straight-deck semi-tractor trailers. Trucks and trailers used to haul the wild horses would be inspected prior to use to ensure wild horses can be safely transported. Wild horses would be segregated by age and sex when possible and loaded into separate compartments. Mares and their un-weaned foals may be shipped together. Transportation of recently captured wild horses is limited to a maximum of 10 hours.

Upon arrival, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are provided good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. At the ORC, a veterinarian provides recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the AVMA. Wild horses in very thin condition, or animals with injuries, are sorted and placed in hospital pens, fed separately, and/or treated for their injuries.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption, sale, or transport to off-range pastures. Preparation involves freeze marking the animals with a unique identification number, vaccination against common diseases, castration, microchipping, and de-worming. At ORC facilities, a minimum of 700 square feet of space is provided per animal.

2.4.5. Adoption

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for one year and inspects the horse and facilities during this period. After one year, the applicant may take title to the horse, at which point the horse becomes the property of the applicant. Adoptions are

conducted in accordance with 43 CFR Subpart 4750.

2.4.6. Sale with Limitations

Buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old or has been offered unsuccessfully for adoption at least three times. The application also specifies that buyers cannot sell the horse to anyone who would sell the animals to a commercial processing plant. Sales of wild horses are conducted in accordance with the 1971 WFRHBA and congressional limitations.

2.4.7. Off-Range Pastures

When shipping wild horses for adoption, sale or Off-Range Pastures (ORPs), the animals may be transported for up to a maximum of 24 hours. Immediately prior to transportation, and after every 24 hours of transportation, animals are off-loaded and provided a minimum of 8 hours on the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and two pounds of good quality hay per 100 pounds of body weight with adequate space to allow all animals to eat at one time. Mares and sterilized stallions (geldings) are segregated into separate pastures. Although the animals are placed in ORP, they remain available for adoption or sale to qualified individuals; and foals born to pregnant mares in ORP are gathered and weaned when they reach about 8-12 months of age and are also made available for adoption. The ORP contracts specify the care that wild horses must receive to ensure they remain healthy and well-cared for. Handling by humans is minimized to the extent possible although regular on-the-ground observation by the ORP contractor and periodic counts of the wild horses to ascertain their well-being and safety are conducted by BLM personnel and/or veterinarians.

2.4.8. Euthanasia or Sale without Limitations

Under the WFRHBA, healthy excess wild horses can be euthanized or sold without limitation if there is no adoption demand for the animals. However, while euthanasia and sale without limitation are allowed under the statute, for several decades Congress has prohibited the use of appropriated funds for this purpose. If Congress were to lift the current appropriations restrictions, then it is possible that excess horses removed from the JMA over the next 10 years could potentially be euthanized or sold without limitation consistent with the provisions of the WFRHBA.

Any old, sick, or lame horses unable to maintain an acceptable body condition (greater than or equal to a Henneke BCS of 3) or with serious physical defects would be humanely euthanized either before gather activities begin or during the gather operations as well as at off-range corrals. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (BLM Permanent Instruction Memorandum (PIM) 2021-007 or most current edition). Conditions requiring humane euthanasia occur infrequently and are described in more detail in PIM 2021-007.

2.4.9. Public Viewing Opportunities

Opportunities for public observation of the gather activities on public lands would be provided, when and where feasible, and would be consistent with BLM IM No. 2013-058 and the Visitation Protocol and Ground Rules for Helicopter WH&B Gathers within Nevada (Section 6.0 of the Supplemental Information document). This protocol is intended to establish observation locations that reduce safety risks to the public during helicopter gathers (e.g., from helicopter-related debris or from the rare helicopter crash landing, or from the potential path of gathered wild horses), to the wild horses (e.g., by ensuring observers would not be in the line of vision of wild horses being moved to the gather site), and to contractors and BLM employees who must remain focused on the gather operations and the health and well-being of the wild horses. Observation locations would be located at gather or holding sites and would be subject to the same cultural resource requirements as those sites.

During water/bait trapping operations, spectators and viewers would be prohibited as it would impact the contractor's ability to capture wild horses. Only essential gather operation personnel would be allowed at the trap site during operations.

2.5 No Action Alternative

Although the No Action Alternative does not comply with the WFRHBA of 1971 and does not meet the purpose and need for the action in this EA, it is included as a basis for comparison with the Proposed Action.

Under the No Action Alternative, a gather to remove excess wild horses would not occur. There would be no active management to control the size of the wild horse population or to bring the wild horse population to AML. The current wild horse population would continue to increase at a rate of 12.2%-23.6% per year (Table 4 of the Supplemental Information document). Within two years, the wild horse population could exceed 330 animals, or nearly three times AML. Wild horses in the JMA often venture onto private property, destroying fences and impacting water sources on private property. Increasing numbers of excess wild horses will continue to deteriorate rangelands within the JMA, public safety concerns will increase along heavily traveled roads, and damage to private property would continue. There would also be an increase in emergency actions necessary to address the overpopulations of wild horses and limited water/forage resources in the JMA.

2.6 Alternatives Considered but Eliminated from further Consideration

The following alternatives to the helicopter drive and bait/water trapping method for the removal of wild horses to reach the established AML were considered but eliminated from detailed analysis for the reasons stated below.

2.6.1. Field Darting Horses with ZonaStat-H (Native PZP) or GonaCon-Equine

This alternative was eliminated from further consideration as the sole method of population reduction and control due to the difficulties inherent in darting wild horses in the project area. Field darting of wild horses typically works in small areas with good access where animals are acclimated to the presence of people who come to watch and photograph them. The presence of water sources on both private and public lands inside and outside the JMA would make it almost impossible to restrict wild horse access to be able to dart horses consistently. Horse behavior limits their approachability/accessibility, so that the number of mares expected to be treatable via darting would be insufficient to control growth. BLM would have difficulties keeping records of animals that have been treated due to common and similar colors and patterns. This formulation of PZP also requires a booster given every year following treatment to maintain the highest level of efficacy. Annual darting of wild horses in large areas can be very difficult to replicate and would be unreliable. For these reasons, this alternative was determined to not be an effective or feasible method for applying population controls to wild horses from the JMA. Darting is included as a potential tool for use under the Proposed Action in areas that may be deemed suitable in the future, and to be implemented in concert with the other methods detailed in the Proposed Action.

2.6.2. Control of Wild Horse Numbers by Fertility Control Treatment Only (No Removals)

An alternative to gather a significant portion of the existing population (95%) and implement fertility control treatments only, without removal of excess wild horses was modeled using a three-year gather/treatment interval over an 11-year period, in the WinEquus software. Based on this modeling, this alternative would not result in attainment of the AML range for the JMA and the wild horse population would continue to have an average population growth rate of 8.7% to 16.3%, adding to the current wild horse overpopulation, albeit at a slower rate of growth. Over the next 11 years an average of 681 wild horse captures would need to take place, to allow for injection of vaccines for population control. Of those, 211 mare captures would lead to treatment with PZP vaccine or other accepted fertility control

vaccines. It is important to understand that in this scenario, each time a wild horse is gathered it is counted, even though the same wild horse may be gathered multiple times during the 11-year period. And each time a wild horse is treated with PZP-22, it is counted even though the same wild horse may be treated multiple times over the 11-year period. See Section 3.0 of the Supplemental Information document for population modeling.

This alternative would not bring the wild horse population to within the established AML range, would allow the wild horse population to continue to grow even further in excess of AML, and would allow resource concerns to further escalate. Implementation of this alternative would result in increased gather and fertility control costs without achieving a thriving natural ecological balance or resource management objectives. This alternative would not meet the purpose and need and therefore was eliminated from further consideration.

2.6.3. Chemical Immobilization

Chemical immobilization as a method of capturing wild horses is not a viable alternative because it is a very specialized technique and is strictly regulated. Currently the BLM does not have sufficient expertise or policy to implement this method and it would be impractical to use given the size of the JMA, access limitations and approachability of the horses.

2.6.4. Use of Wrangler on Horseback Drive-trapping

Use of wranglers on horseback drive-trapping to remove excess wild horses can be somewhat effective on a small scale but due to the number of horses to be gathered, the large geographic size of the JMA, and lack of approachability of the animals, this technique would be ineffective and impractical as a substitute for helicopter trapping. Wild horses often outrun and outlast domestic horses carrying riders. Helicopter assisted roping is typically only used if necessary and when the wild horses are in close proximity to the gather site. For these reasons, this method was eliminated from further consideration.

2.6.5. Designate the JMA to be Managed Principally for Wild Horse Herds Under 43 C.F.R. 4710.3-2.

The areas that make up the JMA are designated in the Land Use Planning process for the long-term management of wild horses. The (BLM) Tonopah Field Office and Humboldt-Toiyabe National Forest do not administer any designated Wild Horse or Burro Ranges, which under 43 C.F.R. 4710.3-2 are "to be managed principally, but not necessarily exclusively, for wild horse or burro herds." There are currently only four designated Wild Horse or Burro Ranges. This alternative would involve no removal of wild horses and would instead address excess wild horse numbers through removal or reduction of livestock within the JMA. In essence, this alternative would exchange use by livestock for use by wild horses. Because this alternative would mean converting the JMAs to a wild horse Range and modifying the existing multiple use relationships established through the land-use planning process, it would first require an amendment to the RMP, which is outside the scope of this EA. This alternative was not brought forward for analysis because it is inconsistent with the 1997 Tonopah RMP and the WFRHBA which directs the Secretary to immediately remove excess wild horses where necessary to ensure a TNEB and multiple use relationship. This alternative is also inconsistent with the BLM's multiple use management mission under FLPMA. Changes to or the elimination of livestock grazing cannot be made through a wild horse gather decision. Furthermore, even with significantly reduced levels of livestock grazing within the gather area relative to the permitted levels authorized in the 1997 Tonopah RMP, there is insufficient habitat for the current population of wild horses, as confirmed by monitoring data. As a result, this alternative was not analyzed in detail.

2.6.6. Raising the Appropriate Management Levels for Wild Horses

Delay of a gather until the AMLs can be reevaluated is not consistent with the WFRHBA, Public

Rangelands Improvement Act (PRIA) or FLPMA or the existing Tonopah RMP. Monitoring and other historical data collected within the JMA does not indicate that an increase in AML is warranted at this time. On the contrary, such monitoring data confirms the need to remove excess wild horses above AML to reverse downward trends, promote improvement of rangeland health and ensure safety and health of wild horses.

Severe range degradation would occur if an AML reevaluation process were initiated without gathering the excess animals and an even larger number of excess wild horses would ultimately need to be removed from the range in order to achieve the AMLs or to prevent the death of individual animals under emergency conditions. This alternative was eliminated from further consideration because it is contrary to the WFRHBA which requires the BLM to manage the rangelands to prevent the range from deterioration associated with an overpopulation of wild horses. Raising the AML where there are known resource degradation issues associated with an overpopulation of wild horses does not meet the Purpose and Need to Restore a TNEB or meet Rangeland Health Standards.

2.6.7. Remove or Reduce Livestock Within the JMA

This alternative would involve no removal of wild horses and would instead address excess wild horse numbers through removal or reduction of livestock within the JMA. In essence, this alternative would simply exchange use by livestock for use by wild horses. This alternative was not brought forward for analysis because it is inconsistent with the Tonopah RMP, and the WFRHBA which directs the Secretary to immediately remove excess wild horses.

The proposal to reduce livestock would not meet the Purpose and Need for action identified in Section 1.2: "to gather and remove excess wild horses from within and outside the Little Fish Lake JMA and to reduce the wild horse population growth rates to achieve and maintain established AML", and to "prevent undue or unnecessary degradation of the public lands, and protect rangeland resources from deterioration associated with excess wild horses within the JMAs, and to restore a TNEB and multiple use relationship on the public lands consistent with the provisions of Section 1333 (a) of the 1971 WFRHBA."

Eliminating or reducing grazing in order to shift forage use to wild horses would not be in conformance with the existing Land Use Plans and is contrary to the BLM's multiple-use mission as outlined in FLPMA and would be inconsistent with the WFRHBA and PRIA. It was Congress' intent to manage wild horses and burros as one of the many uses of the public lands, not a single use. Therefore, the BLM is required to manage wild horses and burros in a manner designed to achieve a TNEB between wild horse and burro populations, wildlife, domestic livestock, vegetation and other uses.

Information about the Congress' intent is found in the Senate Conference Report (92-242) which accompanies the 1971 WFRHBA (Senate Bill 1116): "*The principal goal of this legislation is to provide for the protection of the animals from man and not the single use management of areas for the benefit of wild free-roaming horses and burros. It is the intent of the committee that the wild free-roaming horses and burros be specifically incorporated as a component of the multiple-use plans governing the use of the public lands.*"

Furthermore, simply re-allocating livestock Animal Unit Months (AUMs) to increase the wild horse AMLs would not achieve a TNEB. Wild horses are unlike livestock which can be confined to specific pastures, limited to specific periods of use, and specific seasons-of-use so as to minimize impacts to vegetation during the critical growing season and to riparian zones during the summer months. Wild horses are present year-round and their impacts to rangeland resources cannot be controlled through establishment of a grazing system, such as for livestock. Thus, impacts from wild horses can only be addressed by limiting their numbers to a level that does not adversely impact rangeland resources and

other multiple uses.

Livestock grazing can only be reduced or eliminated through provisions identified within regulations at 43 CFR § 4100 and must be consistent with multiple use allocations set forth in Land Use Plans (LUPs)/RMPs. Such changes to livestock grazing cannot be made through a wild horse gather decision and are only possible if BLM first revises the LUPs to allocate livestock forage to wild horses and to eliminate or reduce livestock grazing. Because this alternative is inconsistent with the Tonopah RMP, it would first require an amendment to the RMP, which is outside the scope of this EA.

2.6.8. Wild Horse Numbers Controlled by Natural Means

This alternative was eliminated from further consideration because it is contrary to the WFRHBA which requires the BLM to prevent range deterioration associated with an overpopulation of wild horses. The alternative of using natural controls to achieve a desirable AML has not been shown to be feasible in the past (NRC 2013).

Survival rates for wild horses on western USA public lands are high (Ransom et al. 2016). None of the significant natural predators from native ranges of the wild equids in Europe, Asia, and Africa — wolves, brown bears, and African lions — exist on the wild horse ranges in the western United States (mountain lions are known to predate on horses, primarily foals, in a few herds (Andreasen et al. 2021), but predation contributes to biologically meaningful population limitation in only a handful of herds). In some cases, adult annual survival rates exceed 95% (ransom et al. 2016).

Many horse herds grow at sustained high rates of 15-25% per year and are not a self-regulating species (NRC 2013, Ransom et al. 2016). The National Academies of Sciences report (NRC 2013) concluded that the primary way that equid populations self-limit is through increased competition for forage at higher densities, which results in smaller quantities of forage available per animal, poorer body condition and decreased natality and survival. It also concluded that the effect of this would be impacts to resource and herd health that are contrary to BLM management objectives and statutory and regulatory mandates. This alternative would result in a steady increase in the wild horse populations which would continue to exceed the carrying capacity of the range resulting in a catastrophic mortality of wild horses in the JMA, and irreparable damage to rangeland resources.

While some members of the public have advocated “letting nature take its course”, allowing horses to die of dehydration and starvation would be inhumane treatment and would be contrary to the WFRHBA, which mandates removal of excess wild horses. The damage to rangeland resources that results from excess numbers of wild horses is also contrary to the WFRHBA, which mandates the Bureau to “*protect the range from the deterioration associated with overpopulation*”, “*remove excess animals from the range so as to achieve appropriate management levels*”, and “*to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area*”.

Title 43 CFR § 4700.0-6 (a) states “*Wild horses shall be managed as self- sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat*”. As the vegetative and water resources are over utilized and degraded to the point of no recovery as a result of the wild horse overpopulation, wild horses would start showing signs of malnutrition and starvation. The weaker animals, generally the older animals, and the mares and foals, would be the first to be impacted. It is likely that a majority of these animals would die from starvation and dehydration which could lead to a catastrophic die off. The resultant population could be heavily skewed towards the stronger stallions which could contribute to social disruption in the JMA. Competition between wildlife and wild horses for forage and water resources would be severe. Wild horses can be aggressive around water sources, and some wildlife may not be able to compete, which could lead to the death of individual animals. Wildlife

habitat conditions would deteriorate as wild horse numbers above AML reduce herbaceous vegetative cover, damage springs and increase erosion, and could result in irreversible damage to the range. This degree of resource impact would likely lead to management of wild horses at a greatly reduced level if BLM is able to manage for wild horses at all on the JMA in the future. For these reasons, this alternative was eliminated from further consideration. This alternative would not meet the Purpose and Need for this EA which it is to remove excess wild horses from within and outside the JMA and to reduce the wild horse population growth rates to manage wild horses within established AML ranges for a TNEB.

2.6.9. Gathering the JMA to AML

Under this Alternative, a gather would be conducted to gather and remove enough wild horses to achieve the AML (132 in the JMA) rather than to low AML for this HMA. A post-gather population size at AML would result in AML being exceeded following the next foaling season. This would be unacceptable for several reasons.

The AML represents "*that 'optimum number' of wild horses which results in a thriving natural ecological balance and avoids a deterioration of the range*" Animal Protection Institute, 109 IBLA 119 (1989). The IBLA has also held that, "*Proper range management dictates removal of horses before the herd size causes damage to the rangeland. Thus, the optimum number of horses is somewhere below the number that would cause resource damage*" Animal Protection Institute, 118 IBLA 63, 75 (1991).

The AML established for the Little Fish Lake JMA represents the maximum population for which TNEB would be maintained. Additionally, the Tonopah RMP objectives for wild horses and burros state: "*When the appropriate management level (or in some cases interim herd size) is exceeded, remove excess wild horses and/or burros to a point which may allow up to three years of population increase before again reaching the appropriate management level or interim herd size".* Gathering to AML (rather than low AML) would be counter to the Tonopah RMP and would not meet the objectives of the RMP.

Additionally, gathering only to AML, would result in the need to follow up with another gather by the next year and could result in continued overutilization of vegetation resources and damage to important wildlife habitats. Frequent gathers could increase the stress to wild horses, as individuals and as entire herds.

This alternative would not meet the Purpose and Need for this EA which it is to remove excess wild horses from within and outside the Little Fish Lake JMA, to reduce the wild horse population growth rates to manage wild horses within established AML ranges, and to minimize the frequency of gathers needed to remove excess wild horses.

The need for the action is to prevent undue or unnecessary degradation of the public lands associated with excess wild horses, to restore a TNEB and multiple use relationship on public lands, consistent with the provisions of Section 1333(b) of the 1971 WFRHBA. For these reasons, this alternative was eliminated from further consideration.

2.6.10. Gathering the JMA after the Completion of a Rangeland Health Assessment

Under this Alternative the JMA would not be gathered until after a Rangeland Health Assessment is completed. Currently excess wild horses in the JMA are causing deterioration to rangeland resources and waiting to complete a Rangeland Health Assessment would only further the degradation of rangelands.

Furthermore, the Alternative wound not meet the Purpose and Need for action identified in Section 1.2: "to achieve and maintain the AML through removal of excess wild horses from within and outside of the HMA boundaries, and to reduce the population growth rate to prevent undue or unnecessary degradation

of the public lands, and protect rangeland resources from deterioration associated with excess wild horses within the HMAs, and to restore a TNEB and multiple use relationship on the public lands consistent with the provisions of Section 1333 (a) of the 1971 WFRHBA."

The need for the action is to prevent undue or unnecessary degradation of the public lands associated with excess wild horses, to restore a TNEB and multiple use relationship on public lands, consistent with the provisions of Section 1333(b) of the 1971 WFRHBA. For these reasons, this alternative was eliminated from further consideration.

3.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL EFFECTS

3.1. Identification of Issues:

Internal scoping was conducted by an interdisciplinary (ID) team to analyze the potential consequences of the Proposed Action. Potential impacts to the following resources/concerns were evaluated in accordance with criteria listed in the NEPA Handbook H-1790-1 (2008) page 41, to determine if detailed analysis was required. Consideration of some of these items is to ensure compliance with laws, statutes or Executive Orders that impose certain requirements upon all Federal actions. Other items are relevant to the management of public lands in general, and to the Battle Mountain District BLM in particular.

Table 2. summarizes which of the supplemental authorities of the human environment and other resources of concern within the project area are present, not present or not affected by the Proposed Action.

Table 2. Summary of Supplemental Authorities and Other Elements of the Human Environment

Resource/Concern	Issue(s) Present? (Y/N)	Affected? (Y/N)	Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
Air Quality	N	N	The air quality status for the project analysis area in Nye County is termed "unclassifiable" by the State of Nevada. No data is collected in areas outside of Pahrump in southeastern Nye County due to the expectation that annual particulate matter would not exceed national standards. The proposed action or alternatives would not affect air quality in Nye County.
Areas of Critical Environmental Concern (ACEC)	N	N	Not present in the designated JMA boundaries.
Cultural Resources	Y	N	In accordance with the SOPs for Gather and Handling Activities in BLM Nevada and Nevada State Historic Preservation Office Protocol agreement, gather facilities would be placed in previously disturbed areas. Should new, previously undisturbed gather sites or holding facility locations be required, appropriate Class III cultural resource inventories would be conducted to avoid placing gather facilities in areas with cultural resources and to ensure that measures are taken to avoid any cultural resource impacts.
Forest and Rangelands	N	N	Project has a negligible impact directly, indirectly and cumulatively to forest health. Detailed analysis not required.
Fish Habitat	Y	Y	Effects to resource are analyzed in this EA.
Migratory Birds	Y	Y	Effects to resource are analyzed in this EA.
Native American Religious and other Concerns	N	N	No affected traditional religious or cultural sites of importance have been identified in the project area.
Species Threatened, Endangered or	N	N	No known T&E or their habitats exist in the JMA.

Resource/Concern	Issue(s) Present? (Y/N)	Affected? (Y/N)	Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
Proposed for listing under the Endangered Species Act.			
Wastes, Hazardous or Solid	N	N	No hazardous or solid wastes exist in the designated HMA boundaries, nor would any be introduced.
Water Quality, Drinking/Ground	N	N	The proposed action or alternatives would not affect drinking or groundwater quality. The project design would avoid surface water and riparian systems and no water wells would be affected.
Wild and Scenic Rivers	N	N	Not Present.
Wilderness/WSA	Y	Y	Effects to resource are analyzed in this EA.
Environmental Justice and Socioeconomics	N	N	The Proposed Action would not have disproportionately high or adverse effects on low income or minority populations. Health and environmental statues would not be compromised. The Proposed Action would not disproportionately impact social or economic values.
Floodplains	N	N	The project analysis area was not included on FEMA flood maps.
Farmlands, Prime and Unique	N	N	Resource not present.
Wetlands/Riparian Zones	Y	Y	Effects to resource are analyzed in this EA.
Non-native Invasive and Noxious Species	Y	Y	Impacts under each alternative could result in increasing weed populations. Analysis in Section 3.9.
Land Use Authorizations	Y	N	The proposed actions and alternatives would not affect land use authorizations.
Lands with Wilderness Characteristics	Y	N	BLM LWC inventory units are contiguous with USFS Wilderness. The LWC units that have wilderness characteristics per BLM managed lands within the horse gather include NV-060-329 and NV-060-231A. Per the Tonopah RMP, LWC's are managed for multiple use. Impacts to Wilderness Character are the same as those analyzed under Wilderness and WSA.
Human Health and Safety	N	N	Risks have been assessed to mitigate any safety hazards in the form of safety plans and risk management worksheets.
Special Status Plant and Animal Species	Y	Y	Effects to resource are analyzed in this EA.
Wildlife	Y	Y	Effects to resource are analyzed in this EA.
Paleontology	N	N	There is a minimal likelihood that resources would be present. Any surface disturbance resulting from the proposed gather would not be sufficient to cause impacts.
Wild Horses	Y	Y	Effects to resource are analyzed in this EA.
Grazing/Livestock Management	Y	Y	Effects to resource are analyzed in this EA
Soils Resources	Y	Y	Effects to resource are analyzed in this EA.
Water Resources	N	N	The proposed action and alternatives would not affect water

Resource/Concern	Issue(s) Present? (Y/N)	Affected? (Y/N)	Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
(Water Rights)			resources or water rights. Project design would avoid surface water and riparian systems. Permitted or pending water uses would not be affected.
Mineral Resources	N	N	There would be no modifications to mineral resources through the Proposed Action.
Vegetation Resources	Y	Y	Impacts under each alternative could result in improving or deteriorating native plant communities. Effects to vegetation resources are analyzed in this EA.
Recreation	Y	N	Recreation is considered present; however, the horse gathering activities would not majorly affect recreation resources in the area. Potential recreational opportunities within the horse gather rea include dispersed camping, hunting, hiking, wildlife watching, etc. The major affected recreational activity that would be most affected would be the hunting with NDOW units (162 and 163). Per NDOW hunting regulations, hunters should check with their local BLM office to inquire about horse gathering activities within their hunt unit/area.
Visual Resource Management	Y	N	Impacts to visual resources would be present; however, the horse gathering activities would not majorly affect visual resource management resources in the area. The gathering activities would not put in place permanent structures and would only occur for short time periods. Impacts would be negligible.

3.2. General Setting

The Little Fish Lake JMA is characterized by hills and mountain slopes transitioning to piedmont fans and eroded fan remnants formed in mixed alluvium derived from both sedimentary and igneous parent material, including loess of volcanic origin. Lower elevations are comprised of inset fans, fan skirts, and stream terraces. The valley bottom has a salty, clayey soil, with a shallow water table. The benches and alluvial fans are gravelly and stony, while the large washes are composed of deep sandy soils relatively free of stone. The internal drainage of the valley is toward the axial drainageway and then to Little Fish Lake. The valley floor is generally higher than the adjacent valleys, except for Monitor Valley to the west, which is generally 100 to 300 feet higher than the corresponding areas in Little Fish Lake Valley. Annual precipitation varies from 8 inches on the valley bottom to 12 inches at the highest elevations. This moisture occurs mainly as snow during the winter months with infrequent thunderstorm activity during the summer months.

The Little Fish Lake JMA is located within the Central Nevada Basin and Range Major Land Resource Area (MLRA). This area is in the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. This MLRA supports saltbush-greasewood, big sagebrush, and pinyon-juniper woodland vegetation in the progression from the lowest to the highest elevation and precipitation. Shadscale, in association with bud sagebrush, spiny hopsage, ephedra, winterfat, fourwing saltbush, Indian ricegrass, squirreltail, and galleta, characterizes the saltbush-greasewood type. With an increase in moisture, plants associated with shadscale are replaced by needlegrasses, bluegrasses, bluebunch or beardless wheatgrass, basin wildrye, and forbs. Black greasewood and Nuttall saltbush are important on some sites. Big sagebrush and black sagebrush, which grows on soils that are shallow to an indurated pan or to bedrock, are dominant. In the pinyon-juniper woodland, bitterbrush, serviceberry, and snowberry grow in association with Utah juniper and singleleaf pinyon. The highest elevations support thickets of curl-leaf mountain mahogany and small amounts of mixed conifer forest with limber, bristlecone, or ponderosa pine, Douglas-fir, or white fir. On bottom lands, basin wildrye, creeping wildrye, alkali

sacaton, wheatgrasses, bluegrasses, sedges, and rushes are typical. Black greasewood, rubber rabbitbrush, and big sagebrush grow on the drier sites. Inland saltgrass, alkali sacaton, black greasewood, rubber rabbitbrush, and big saltbush typify the vegetation on strongly saline-alkali soils (NRCS, 2006).

3.3. Wild Horses

Affected Environment

Little Fish Lake HMA/WHT

The Little Fish Lake HMA/WHT was originally designated as a BLM Herd Area following the passage of the WFRHBA of 1971. Public Law 100-550, the Nevada Enhancement Act, (1988) added approximately 750,000 acres to Forest System Lands in the Toiyabe National Forest from public lands managed by BLM, which resulted in the USFS assuming management responsibility for large portions of the original Little Fish Lake HMA and the Wagon Johnnie Allotment. The HMA/WHT boundaries are nearly identical to the original herd area boundaries. The AML for the Wagon Johnnie Allotment (Little Fish Lake HMA/WHT) was established by a stipulated agreement between BLM and E. Wayne Hage, Colvin and Son Cattle Co., and Russell Ranches through USDI, Office of Hearings and Appeals, Hearing Division signed May 11, 1992. AML was set for entire allotment at 132 wild horses. AML For the BLM portion was affirmed by the Tonopah RMP approved October 6, 1997. The RMP objectives state "*to manage wild horse and/or burro populations within Herd Management Areas at levels which will preserve and maintain a thriving natural ecological balance consistent with other multiple-use objectives*" and "*to manage wild horses and/or burros at appropriate management levels (AML) or interim herd size (IHS) for each HMA . . . .*" The current AML for the HMA is 39 and the AML for WHT is 93, making the overall AML for the JMA 132. The current estimated population is 350.

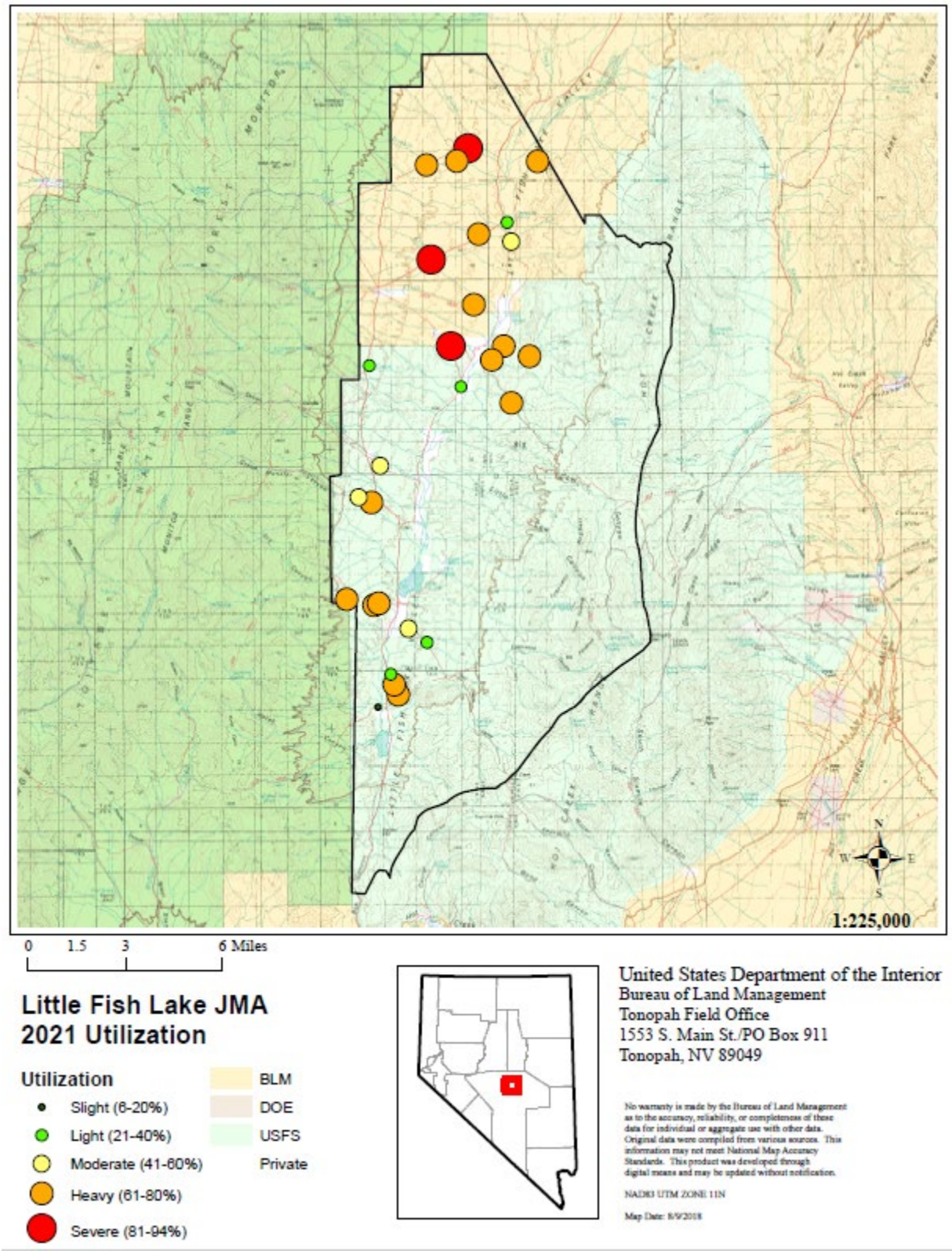
Water available for use by wild horses within the JMA is limited to a few perennial sources including Sevenmile Spring and Clear Creek which tend to produce water year-round. As water supplies become depleted at other smaller water sources, wild horses tend to concentrate around these primary water sources causing negative effects to riparian resources (see Supplemental Information document, Section 7). These water sources are monitored throughout the summer to make sure water is available for wild horses. During the summer or when drought conditions exist in the JMA, wild horses will seek out water sources located on private property, often damaging fencing, wells, and troughs.

Drought is a common occurrence throughout Nevada and the Great Basin. Drought conditions during the period of March through June can substantially reduce annual production of forage, as well as have detrimental effects on vegetative health, especially under heavy or repeated grazing. According to the U.S. Drought Monitor (droughtmonitor.unl.edu), current drought conditions as of March 1, 2022, for Nye County range from severe to exceptional. The portions of the county where the JMA is located primarily fall under extreme (category D3) to exceptional (category D4) (Rippey, 2022). Possible impacts due to these categories of drought could include major crop/ pasture losses; widespread water shortages or restrictions; and shortages of water in reservoirs, streams, and wells creating water emergencies. As water becomes scarcer in the summer months, even less forage would be available as wild horses will travel shorter distances from the available water. With the current excess population of wild horses, severe range degradation may occur. Overall wild horse herd and individual health may also be at risk if AML is not achieved and maintained.

Rangeland resources have been and are currently being impacted within the Little Fish Lake HMA due to the over-population of wild horses. Utilization data was collected for Little Fish Lake HMA in December 2021 at 28 Key Areas (KAs). The key forage species monitored at that time include Indian ricegrass (*Achnatherum hymenoides*), winterfat (*Krascheninnikovia lanata*), Squirreltail grass (*Elymus elymoides*)

crested wheatgrass (*Agropyron cristatum*), and Needleandthread grass (*Hesperostipa comata*). Current monitoring data collected using Range Utilization Height-Weight Method for grasses and Landscape Appearance Method for shrubs over the last three years has indicated Moderate (41-60%), Heavy (61-80%), and Severe (81-94%) utilization directly attributable to wild horses at most sites. Use pattern mapping from December 2021 shows wild horse utilization for 11% of the monitoring locations as negligible (0-5%), 14% as light (21-40%), 21% as moderate (41-60%), 34% as heavy (61-80%), and 11% as severe (81-100%). Map 2 depicts use pattern mapping of the December 2021 utilization data. For the BLM-managed portion of the JMA, the 1997 Tonopah Resource Management Plan (RMP) allocated 28% of the forage for wild horses (468 of 1,687 AUMs). The RMP also specifies utilization of key perennial grass species should not exceed 50%, and key shrub species should not exceed 45%. As such, wild horse use should not exceed 14% on perennial grasses or 13% on shrubs. All plots on BLM-managed lands exceed this threshold.

Utilization data showed the majority of the JMA (16 of 28 sites) experienced heavy to severe horse use (61-100%), with many sites lacking key species in the interspaces and the reproductive capability of species severely limited. Many sites had young bunchgrasses uprooted by horse use. All of the KAs were primarily utilized by wild horses, though signs of cattle utilization were also apparent at many sites. Numerous sites and many roads throughout the JMA showed extensive wild horse trailing and stud piles. While some new growth of both grasses and shrubs was observed at most KAs, plant vigor for those individuals exhibiting heavy to severe utilization was lower than would otherwise be expected.



Map 2: Little Fish Lake JMA 2021 Utilization

Population inventory flights have been conducted in the JMA every two to three years. These population inventory flights have provided information pertaining to population numbers, foaling rates, distribution, and herd health. A population inventory was conducted in March 2021 utilizing a direct count and Double Simultaneous Count method and 242 wild horses were observed throughout the project area. Wild horse body condition scores (BCS) within the JMA currently range from a score of 2-5 (Very thin/emaciated – Moderate) based on the Henneke Body Condition Score.

Genetic monitoring and analysis were completed after the most recent gather conducted in 2015. As reported by Texas A&M, highest mean genetic similarity of the Little Fish Lake herd was with Light Racing and Riding breeds, followed closely by the Oriental and Arabian breeds. The results indicate a herd with mixed origins with no clear indication of primary breed type. In comparison to other feral herds from Nevada Little Fish Lake herd clusters close to the Seven Mile herd. Genetic variability of this herd in general is on the high side with only a moderate percentage of variation that is at risk. Genetic similarity results suggest a herd with mixed ancestry (Cothran, 2015).

Because of history, context, and periodic introductions, wild horses that inhabit the Little Fish Lake JMA should not be considered an isolated population (NRC 2013). Rather, managed herds of wild horses should be considered as components of interacting metapopulations, connected by interchange of individuals and genes due to both natural and human-facilitated movements. These animals are part of part of a larger metapopulation (NRC 2013) that has demographic and genetic connections with other BLM-managed herds in Nevada, Utah, and beyond. Pairwise Fst values support the conclusion that wild horses in the Little Fish Lake JMA are highly genetically similar (i.e., Fst <0.05; Frankham et al. 2010) to a large number of other wild horse herds (NRC, 2013). Wild horse herds in the larger metapopulation have a background of diverse domestic breed heritage, probably caused by natural and intentional movements of animals between herds.

The Little Fish Lake HMA and WHT are located within Central Nevada in the middle of a large number of contiguous or adjacent wild horse management areas that span from U.S. Highway 50 in the north to State Highway 6 in the south. All total, nine HMAs and eight WHTs exist and are contiguous or adjacent, spanning over three million acres. Approximately 5,000 wild horses inhabit this large set of herds within Central Nevada. With just the known and suspected movement through the Monitor WHT, Seven Mile and Stone Cabin HMAs, there is currently no concern for the genetic health of the horses of the Little Fish Lake JMA. Continued future monitoring of this JMA and the surrounding management areas will ensure adequate assessment of genetic health for all of the wild horse management areas in the region.

Genetic baseline data would be collected at regular periods to monitor the genetic diversity of the wild horses within the project area. Samples may also be taken for ancestral analysis. Analysis would determine whether management is maintaining acceptable genetic diversity (and avoiding excessive risk of inbreeding depression).

Under all action alternatives, wild horse introductions from other HMAs could be used if needed, to augment observed heterozygosity, which is a measure of genetic diversity, the result of which would be to reduce the risk of inbreeding-related health effects. Introducing a small number of fertile animals every generation (about every 8-10 years) is a standard management technique that can alleviate potential inbreeding concerns (BLM, 2010). However, with the suspected movement of wild horses throughout the region, it is doubtful that such action would be necessary for the Little Fish Lake JMA.

The most recent gather conducted in the Little Fish Lake HMA was in February 2015 as a result of emergency conditions. A total of 147 wild horses were gathered, with 140 removed and seven released. There were no deaths or euthanasia. Prior to 2015, the JMA was gathered as part of a larger complex with

the Seven Mile, Fish Creek, and North Monitor HMAs and associated WHTs in 2005 and 2006 to achieve the AMLs throughout the Complex.

Environmental Effects

Proposed Action

The Proposed Action would decrease the existing overpopulation of wild horses in the course of successive helicopter drive trap and bait and water trapping operations over a period of ten years. Any mares that would be returned to the range would be treated with fertility control (PZP vaccines, GonaCon, IUDs). The objectives of this alternative include managing the Little Fish Lake JMA within a range between the AML and a level which will allow three years for AML to be exceeded as specified in the 1997 Tonopah RMP. This range may vary through the years as adjusted for growth rates and is currently estimated to be 79-132 wild horses for the JMA. It is reasonably foreseeable that, over the short-term, if the objective population level cannot be reached initially, individuals in the herd would still be subject to increased stress and possible death as a result of continued competition for water and forage until the project area's population can be reduced to the AML range. The areas experiencing heavy and severe utilization levels by wild horses would likely still be subject to some excessive use and impacts to rangeland resources, those being concentrated trailing, riparian trampling, increased bare ground, etc. These impacts would be expected to continue until the project area's population can be reduced to the AML range and concentration of horses can be reduced.

Removal of excess wild horses and achievement of the AML range would improve herd health. Decreased competition for forage and water resources would reduce stress and promote healthier animals. This removal of excess animals coupled with anticipated reduced reproduction (population growth rate) as a result of fertility control should result in improved health and condition of mares and foals as the actual population comes into line with the population level that can be sustained with available forage and water resources and would allow for healthy range conditions (and healthy animals) over the longer-term. Additionally, reduced population growth rates would be expected to extend the time interval between required gathers and reduce disturbance to individual animals as well as to the herd social structure over the foreseeable future.

Bringing the wild horse population size within the AML range and slowing its growth rate once that level has been achieved would reduce damage to the range from the current overpopulation of wild horses and allow vegetation resources to start recovering, without the need for additional gathers in the interim. As a result, there would be fewer disturbances to individual animals and the herd, and a more stable wild horse social structure would be provided.

Impacts to individual animals may occur as a result of handling stress associated with the gathering, processing, and transportation of animals. The intensity of these impacts varies by individual animal and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality to individual animals from these impacts is infrequent but does occur in 0.5% to 1% of wild horses gathered in a given gather (Scasta, 2019). Other impacts to individual wild horses include separation of members of individual bands of wild horses and removal of animals from the population.

Indirect impacts can occur after the initial stress event and may include increased social displacement or increased conflict between stallions. These impacts are known to occur intermittently during wild horse gather operations. Traumatic injuries may occur; however, typical injuries involve bruises from biting and/or kicking, which do not break the skin.

BLMs Use of Contraception in Wild Horse Management

Expanding the use of population growth suppression to slow population growth rates and reduce the

number of animals removed from the range and sent to Off-Range Pastures (ORPs) is a BLM priority. The WFRHBA of 1971 specifically provides for contraception and sterilization (section 3.b.1) as viable management approaches. No finding of excess animals is required for BLM to pursue contraception in wild horses or wild burros. Contraception has been shown to be a cost effective and humane treatment to slow increases in wild horse populations or, when used with other techniques, to reduce horse population size (Bartholow, 2004, de Seve and Boyles-Griffin, 2013). All fertility control methods in wild animals are associated with potential risks and benefits, including effects of handling, frequency of handling, physiological effects, behavioral effects, and reduced population growth rates (Hampton et al., 2015). Contraception by itself does not remove excess horses from an HMA's population, so if a wild horse population is in excess of AML, then contraception alone would result in some continuing environmental effects of horse overpopulation. Successful contraception reduces future reproduction. Limiting future population increases of horses could limit increases in environmental damage from higher densities of horses than currently exist. Horses are long-lived, potentially reaching 20 years of age or more in the wild and, if the population is above AML, treated horses returned to an HMA may continue exerting negative environmental effects, as described in the sections (PZP Direct Effects and GnRH) below, throughout their life span. In contrast, if horses above AML are removed when horses are gathered, that leads to an immediate decrease in the severity of ongoing detrimental environmental effects throughout their lifespan, as described above. See Section 8.0 of the Supplemental Information document for a more detailed analysis on fertility control.

Fertility Control Vaccines

Fertility control vaccines (also known as immunocontraceptives) meet BLM requirements for safety to mares and the environment (EPA 2009a, 2012). Because they work by causing an immune response in treated animals, there is no risk of hormones or toxins being taken into the food chain when a treated mare dies. The BLM and other land managers have mainly used three fertility control vaccine formulations for fertility control of wild mares on the range: ZonaStat-H, PZP-22, and GonaCon-Equine. As other formulations become available, they may be applied in the future.

In any vaccine, the antigen is the stimulant to which the body responds by making antigen-specific antibodies. Those antibodies then signal to the body that a foreign molecule is present, initiating an immune response that removes the molecule or cell. Adjuvants are additional substances that are included in vaccines to elevate the level of immune response. Adjuvants help to incite recruitment of lymphocytes and other immune cells which foster a long-lasting immune response that is specific to the antigen.

Liquid emulsion vaccines can be injected by hand or remotely administered in the field using a pneumatic dart (Roelle and Ransom 2009, Rutberg et al. 2017, McCann et al. 2017) in cases where mares are relatively approachable. Use of remotely delivered (dart-delivered) vaccine is generally limited to populations where individual animals can be accurately identified and repeatedly approached within 50 meters (BLM 2010). Booster doses can be safely administered by hand or by dart. Even with repeated booster treatments of the vaccines, it is expected that most mares would eventually return to fertility, though some individual mares treated repeatedly may remain infertile. Once the herd size in a project area is at AML and population growth seems to be stabilized, BLM can make adaptive determinations as to the required frequency of new and booster treatments.

BLM has followed SOPs for fertility control vaccine application (BLM IM 2009-090, Supplemental Information document at heading 9.0). Herds selected for fertility control vaccine use should have annual growth rates over 5%, have a herd size over 50 animals, and have a target rate of treatment of between 50% and 90% of female wild horses or burros. The IM requires that treated mares be identifiable via a visible freeze brand or individual color markings so that their vaccination history can be known. The IM calls for follow-up population surveys to determine the realized annual growth rate in herds treated with

fertility control vaccines.

Porcine Zona Pellucida (PZP) Vaccine

For additional detail about the use of PZP as a fertility control agent, please refer to the Supplemental Information document at heading 7.1, and the Standard Operating Procedures at heading 9.0. PZP may be applied to mares prior to their release back into the HMA. PZP vaccines meet most of the criteria that the National Research Council (2013) used to identify promising fertility control methods, in terms of delivery method, availability, efficacy, and side effects. PZP is relatively inexpensive, meets BLM requirements for safety to mares and the environment, and is produced as the liquid PZP vaccine ZonaStat-H, an EPA-registered commercial product (EPA, 2012, SCC, 2015), or as PZP-22, which is a formulation of PZP in polymer pellets that may lead to a longer immune response (Turner et al., 2002, Rutberg et al., 2017). Currently, ZonStat_H can also be applied via remote darting in the field.

For the PZP-22 vaccine pellet formulation administered during gathers, each released mare would receive a single dose of the PZP contraceptive vaccine pellets at the same time as a dose of the liquid PZP vaccine with modified Freund's Complete Adjuvant. Most mares recover from the stress of capture and handling quickly once released back into the HMA and none are expected to suffer serious long-term effects from the injections, other than the direct consequence of becoming temporarily infertile. Injection site reactions associated with fertility control treatments are possible in treated mares (Roelle and Ransom, 2009, Bechert et al., 2013, French et al., 2017), but swelling or local reactions at the injection site are expected to be minor in nature. In subsequent years, Native PZP (or the currently most effective formulation) could be administered as a booster dose using the one-year liquid PZP vaccine by field or remote darting. The dart-delivered formulation produced injection-site reactions of varying intensity, though none of the observed reactions appeared debilitating to the animals (Roelle and Ransom, 2009). Joonè et al. (2017a) found that injection site reactions had healed in most mares within three months after the booster dose, and that they did not affect movement or cause fever.

Darting can be implemented opportunistically by applicators near water sources or along main trails out on the range. Blinds may be used to camouflage applicators to allow efficient treatment of as many mares as possible. Applicators would be trained and certified in darting techniques and recordkeeping protocols. A tracking database would be utilized to document treated mares, and the history of treatment and foal production. This would include a list of marked horses and/or a photo catalog with descriptions of the animals to assist in identifying which ones have been treated and which ones still need to be treated. Application of fertility control treatment would be conducted in accordance with the approved standard operating and post-treatment monitoring procedures (SOPs, Supplemental Information document).

The historically accepted hypothesis explaining PZP vaccine effectiveness assumes that when injected as an antigen in vaccines, PZP causes the mare's immune system to produce antibodies that are specific to zona pellucida proteins on the surface of that mare's eggs. The antibodies bind to the mare's eggs surface proteins (Liu et al., 1989), and effectively block sperm binding and fertilization (Zoo Montana, 2000). Because treated mares do not become pregnant but other ovarian functions remain generally unchanged, PZP can cause a mare to continue having regular estrus cycles throughout the breeding season. Other research has shown, though, that there may be changes in ovarian structure and function due to PZP vaccine treatments (e.g., Joonè et al., 2017b, 2017c). Research has demonstrated that contraceptive efficacy of an injected liquid PZP vaccine, such as ZonaStat-H, is approximately 90% or more for mares treated twice in one year (Turner and Kirkpatrick 2002, Turner et al., 2008). The highest success for fertility control has been reported when the vaccine has been applied November through February. High contraceptive rates of 90% or more can be maintained in horses that are boostered annually with liquid PZP (Kirkpatrick et al., 1992). Approximately 60% to 85% of mares are successfully contracepted for one year when treated simultaneously with a liquid primer and PZP-22 pellets (Rutberg et al., 2017).

Application of PZP for fertility control would reduce fertility in a large percentage of mares for at least one year (Ransom et al., 2011). Detailed analysis of the effects of PZP is provided in the Supplemental Information document at 8.0.

Gonadotropin Releasing Hormone (GnRH) Vaccine (GonaCon)

GonaCon may be applied to mares prior to their release back into the HMA. Taking into consideration available literature on the subject, the National Research Council concluded in their 2013 report that GonaCon-B (which is produced under the trade name GonaCon-Equine for use in feral horses and burros) was one of the most preferable methods available for contraception in wild horses and burros (NRC, 2013), in terms of delivery method, availability, efficacy, and side effects. GonaCon-Equine is approved for use by authorized federal, state, tribal, public and private personnel for application to wild and feral equids in the United States (EPA, 2013, 2015). Additional detail about the use of GonaCon is available in the Supplemental Information document at heading 7.2.

GonaCon is an immunocontraceptive vaccine which has been shown to provide multiple years of infertility in several wild ungulate species, including horses (Killian et al., 2008; Gray et al., 2010). GonaCon uses the gonadotropin-releasing hormone (GnRH), a small neuropeptide that performs an obligatory role in mammalian reproduction, as the vaccine antigen. When combined with an adjuvant, the GnRH vaccine stimulates a persistent immune response resulting in prolonged antibody production against GnRH, the carrier protein, and the adjuvant (Miller et al., 2008). The most direct result of successful GnRH vaccination is that it has the effect of decreasing the level of GnRH signaling in the body, as evidenced by a drop in luteinizing hormone levels, and a cessation of ovulation. The lack of estrus cycling that results from successful GonaCon vaccination has been compared to typical winter period of anestrus in open mares. As anti-GnRH antibodies decline over time, concentrations of available endogenous GnRH increase and treated animals usually regain fertility (Power et al., 2011).

Changes in hormones associated with anti-GnRH vaccination led to measurable changes in ovarian structure and function. The volume of ovaries reduced in response to treatment (Garza et al. 1986, Dalin et al., 2002, Imboden et al., 2006, Elhay et al., 2007, Botha et al., 2008, Gionfriddo, 2011a, Dalmau et al., 2015). Treatment with an anti-GnRH vaccine changes follicle development (Garza et al., 1986, Stout et al. 2003, Imboden et al., 2006, Elhay et al., 2007, Donovan et al. 2013, Powers et al., 2011, Balet et al., 2014), with the result that ovulation does not occur.

BLM may apply GonaCon-Equine to captured mares and could return to the HMA as needed to reapply GonaCon-Equine by field or remote darting. GonaCon-Equine can safely be reapplied as necessary to control the population growth rate. Even with one booster treatment of GonaCon-Equine, it is expected that most, if not all, mares would return to fertility at some point, although the average duration of effect after booster doses has not yet been quantified. Although it is unknown what would be the expected rate for the return to fertility rate in mares boosted more than once with GonaCon-Equine, a prolonged return to fertility would be consistent with the desired effect of using GonaCon (e.g., effective contraception). Once the herd size in the project area is at AML and population growth seems to be stabilized, BLM could make a determination as to the required frequency of new mare treatments and mare re-treatments with GonaCon to maintain the number of horses within AML.

Injection site reactions associated with immunocontraceptive treatments are possible in treated mares (Roelle and Ransom, 2009). Whether injection is by hand or via darting, GonaCon-Equine is associated with some degree of inflammation, swelling, and the potential for abscesses at the injection site (Baker et al. 2018). Swelling or local reactions at the injection site are generally expected to be minor in nature, but some may develop into draining abscesses. Detailed analysis of the effects of GonaCon are located in the Supplemental Information document at 8.0.

PZP and GonaCon Indirect Effects

One expected long-term, indirect effect on wild horses treated with fertility control such as PZP or GonaCon would be an improvement in their overall health (Turner and Kirkpatrick, 2002). Many treated mares would not experience the biological stress of reproduction, foaling, and lactation as frequently as untreated mares. The observable measure of improved health is higher body condition scores (Nuñez et al., 2010). After a treated mare returns to fertility, her future foals would be expected to be healthier overall and would benefit from improved nutritional quality in the mare's milk. This is particularly to be expected if there is an improvement in rangeland forage quality at the same time, due to reduced wild horse population size. Past application of fertility control has shown that mares' overall health and body condition remains improved even after fertility resumes. Fertility control vaccine treatment may increase mare survival rates, leading to longer potential lifespan (Turner and Kirkpatrick, 2002, Ransom et al., 2014a). To the extent that this happens, changes in lifespan and decreased foaling rates could combine to cause changes in overall age structure in a treated herd (i.e., Turner and Kirkpatrick, 2002, Roelle et al., 2010), with a greater prevalence of older mares in the herd (Gross 2000). Observations of mares treated in past gathers showed that many of the treated mares were larger than, maintained higher body condition than, and had larger healthy foals than untreated mares. For additional information, refer to the Supplemental Information document Section 8.0.

Alternative B

Under this alternative the BLM would gather and remove excess animals to within AML range without mare fertility control. Environmental effects and reasonably foreseeable trends from this alternative would be similar to the gathering and handling impacts under the Proposed Action. Gathers conducted under Alternative B could be completed as gate-cut gathers where only enough horses are gathered and removed to achieve the AML goal, or as selective removal where removal criteria such as age and conformation could be utilized to choose which horses are to be released in order to improve wild horse health and characteristics and remove only adoptable horses while releasing the older horses back to the range. Mares would not endure the additional stress of being vaccinated or microchipped while restrained in the working chute. A gate cut scenario could reduce the opportunity for selection of quality horses for release back to the range and selection of desired ages to ship to adoption which could result in additional older or unadoptable horses being sent to ORPs rather than being released to the range.

Effects Common to the Proposed Action and Alternatives B

Over the past 35 years, various impacts to wild horses as a result of gather activities have been observed. Under the Proposed Action, potential impacts to wild horses would be both direct and indirect, occurring to both individual horses and the population as a whole.

Helicopter Drive Trapping

The BLM has been conducting wild horse gathers since the mid-1970s. and has been using helicopters for such gathers since the late 1970's. During this time, methods and procedures have been identified and refined to minimize stress and impacts to wild horses during gather implementation. Published reviews of agency practice during gathers and subsequent holding operations confirm that BLM follows guidelines to minimize those impacts and ensure humane animal care and high standards of welfare (GAO, 2008, AAEP, 2011, Greene et al., 2013, Scasta, 2019). Refer to Sections 4 and 5 of the Supplemental Information document for information on the methods that are utilized to reduce injury or stress to wild horses and burros during gathers. The Comprehensive Animal Welfare Program (CAWP), PIM 2021-002 would be implemented to ensure a safe and humane gather occurs and would minimize potential stress and injury to wild horses.

In any given gather, gather-related mortality averages only about one half of one percent (0.5%), which is

very low when handling wild animals. Approximately, another six-tenths of one percent (0.6%) of the captured animals, on average, are humanely euthanized due to pre-existing conditions and in accordance with BLM policy (GAO, 2008, Scasta, 2019). Pre-existing conditions include such things as club feet, teeth worn to the gums of older horses, poor body condition and old breaks to limbs that healed poorly. These data affirm that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective, and practical means for the gather and removal of excess wild horses (and burros) from the public lands. The BLM also avoids gathering wild horses by helicopter during the 6 weeks prior to and following the expected peak of the foaling season (i.e., from March 1 through June 30).

Individual, direct impacts to wild horses include the handling stress associated with the roundup, capture, sorting, handling, and transportation of the animals. The intensity of these impacts varies by individual and is indicated by behaviors ranging from nervous agitation to physical distress. When being herded to trap site corrals by the helicopter, injuries sustained by wild horses may include bruises, scrapes, or cuts to feet, legs, face, or body from rocks, brush or tree limbs. Rarely, wild horses will encounter barbed wire fences and will receive wire cuts. These injuries are very rarely fatal and are treated on-site until a veterinarian can examine the animal and determine if additional treatment is indicated.

Other injuries may occur after a horse has been captured and is either within the trap site corral, the temporary holding corral, during transport between facilities, or during sorting and handling. Occasionally, horses may sustain a spinal injury or a fractured limb but based on prior gather statistics, serious injuries requiring humane euthanasia occur in less than 1 horse per every 100 captured. Similar injuries could be sustained if wild horses were captured through bait and/or water trapping, as the animals still need to be sorted, aged, transported, and otherwise handled following their capture. These injuries can result from kicks and bites, or from collisions with corral panels or gates.

To minimize the potential for injuries from fighting, the animals are transported from the trap site to the temporary holding facility where they are sorted as quickly and safely as possible, then moved into large holding pens where they are provided with hay and water. Fatalities and injuries due to gathers are few and far between with direct gather related mortality averaging less than 1%. Most injuries are a result of the horse's temperament, meaning they do not remain calm and lash out more frequently.

Gathering wild horses during the summer months can potentially cause heat stress. Gathering wild horses during the fall/winter months reduces risk of heat stress, although this can occur during any gather, especially in older or weaker animals. Adherence to the SOPs, CAWP, and techniques used by the gather contractor or BLM staff will help minimize the risks of heat stress. Heat stress does not occur often, but if it does, death can result. Most temperature related issues during a gather can be mitigated by adjusting daily gather times to avoid the extreme hot or cold periods of the day. The BLM and the contractor would be pro-active in controlling dust in and around the holding facility and the gather corrals to limit the horses' exposure to dust.

Indirect individual impacts are those which occur to individual wild horses after the initial event. These may include miscarriages in mares, increased social displacement, and conflict in studs. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief 1 to 2-minute skirmish between older studs which ends when one stud retreats. Injuries typically involve a bite or kick with bruises which do not break the skin. Like direct individual impacts, the frequency of these impacts varies with the population and the individual. Observations following capture indicate the rate of miscarriage varies but can occur in about 1 to 5% of the captured mares, particularly if the mares are in very thin body condition or in poor health. A few foals may be orphaned during a gather. This can occur if the mare rejects the foal, the foal becomes separated from its mother and cannot be matched up following sorting, the mare dies or must be

humanely euthanized during the gather, the foal is ill or weak and needs immediate care that requires removal from the mother, or the mother does not produce enough milk to support the foal. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the mother rejected it or died. These foals are usually in poor condition. Every effort is made to provide appropriate care to orphan foals. Gather staff may administer electrolyte solutions or orphan foals may be fed milk replacer as needed to support their nutritional needs. Orphan foals may be placed in a foster home in order to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

Through the capture and sorting process, wild horses are examined for health, injury and other defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM PIM 2021-007 is used as a guide to determine if animals meet the criteria and should be euthanized (refer to CAWP, Section 4.0 of the Supplemental Information document). Animals that are euthanized for non-gather related reasons include those with old injuries (broken or deformed limbs) that cause lameness or prevent the animal from being able to maintain an acceptable body condition (greater than or equal to BCS 3); old animals that have serious dental abnormalities or severely worn teeth and are not expected to maintain an acceptable body condition, and wild horses that have serious physical defects such as club feet, severe limb deformities, or sway back. Some of these conditions have a causal genetic component such that the animals should not be returned to the range; this prevents suffering and avoids amplifying the incidence of the deleterious gene in the wild population.

Wild horses not captured may be temporarily disturbed and moved into another area during the gather operation. With the exception of changes to herd demographics from removals, direct population impacts have proven to be temporary in nature with most, if not all, impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release, except for a heightened awareness of human presence.

It is not expected that genetic health would be affected by the Proposed Action. Available indications are that these populations contain high levels of genetic diversity at this time. The AML of 132 wild horses in the Little Fish Lake JMA in relation to the number of HMAs and WHTs within the region should provide for acceptable genetic diversity. If at any time in the future the genetic diversity in the Little Fish Lake JMA is determined to be relatively low, then a number of other HMAs in the region could be used as sources for fertile wild horses that could be transported into the area of concern.

By maintaining wild horse population size near the AML, there would be a lower density of wild horses across the Little Fish Lake JMA, reducing competition for resources and allowing the wild horses that remain to use their preferred habitat. Maintaining population size near the established AML would be expected to improve forage quantity and quality and promote healthy, self-sustaining populations of wild horses in a TNEB and multiple use relationship on the public lands in the area. Deterioration of the range associated with wild horse overpopulation would be reduced. Managing wild horse populations in balance with the available habitat and other multiple uses would lessen the potential for individual animals or the herd to be affected by drought and would avoid or minimize the need for emergency gathers. All this would reduce stress to the animals and increase the success of these herds over the long-term.

Water/Bait Trapping
Bait and/or water trapping generally requires a long window of time for success. Although the trap would be set in a high probability area for capturing excess wild horses residing within the area and at the most effective time periods, time is required for the horses to acclimate to the trap and/or decide to access the water/bait. The Comprehensive Animal Welfare Program (CAWP), PIM 2021-002 would be implemented to ensure a safe and humane gather occurs and would minimize potential stress and injury to wild horses.

Trapping involves setting up portable panels around an existing water source or in an active wild horse area, or around a pre-set water or bait source. The portable panels would be set up to allow wild horses to go freely in and out of the corral until they have adjusted to it. When the wild horses fully adapt to the corral, it is fitted with a gate system. The acclimatization of the wild horses creates a low stress trap. During this acclimation period the horses would experience some stress due to the panels being setup and perceived access restriction to the water/bait source.

When actively trapping wild horses, the trap would be checked on a daily basis. Wild horses would be either removed immediately or fed and watered for up to several days prior to transport to a holding facility. Existing roads would be used to access the trap sites.

Gathering of the excess wild horses utilizing bait/water trapping could occur at any time of the year and would extend until the target number of animals are removed to relieve concentrated use by horses in the area, reach AML, to implement population control measures, and to remove animals residing outside HMA boundaries. Generally, bait/water trapping is most effective when a specific resource is limited, such as water during the summer months. For example, in some areas, a group of wild horses may congregate at a given watering site during the summer because few perennial water resources are available nearby. Under those circumstances, water trapping could be a useful means of reducing the number of wild horses at a given location, which can also relieve the resource pressure caused by too many horses. As the proposed bait and/or water trapping in this area is a low stress approach to gathering of wild horses, such trapping can continue into the foaling season without harming the mares or foals.

Impacts to individual animals would be similar to those for helicopter gathers and could occur as a result of stress associated with the gather, capture, processing, and transportation of animals. The intensity of these impacts would vary by individual and would be indicated by behaviors ranging from nervous agitation to physical distress. Mortality of individual horses from these activities is rare but can occur. Other impacts to individual wild horses include separation of members of individual bands and removal of animals from the population.

Indirect impacts can occur to horses after the initial stress event and could include increased social displacement or increased conflict between studs. These impacts are known to occur intermittently during wild horse gather operations. Traumatic injuries could occur and typically involve bruises caused by biting and/or kicking. Horses may potentially strike or kick gates, panels or the working chute while in corrals or trap which may cause injuries. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. Since handling, sorting and transportation of horses would be similar to those activities under Helicopter drive trapping, the direct and indirect impacts would be expected to be similar as well. Past gather data shows that euthanasia, injuries and death rates for both types of gathers are similar.

Transport, Off-range Corrals, Off-range Pastures, and Adoption Preparation
During transport, potential impacts to individual horses can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to die during transport.

Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. A small percentage of animals can die during this transition; however, some of these animals are in such poor condition that it is unlikely they would have survived if left on the range.

During the preparation process, potential impacts to wild horses are similar to those that can occur during

transport. Injury or mortality during the preparation process is low but can occur.

Mortality at off-range corrals (ORCs, formerly short-term holding) facilities averages approximately 5% (GAO-09-77, Page 51), which includes animals euthanized due to a pre-existing condition, animals in extremely poor condition, animals that are injured and would not recover, animals that are unable to transition to feed; and animals that die accidentally during sorting, handling, or preparation.

Off-Range Pastures (ORPs formerly known as long-term pastures), are designed to provide excess wild horses with humane, and in some cases life-long care in a natural setting off the public rangelands. There, wild horses are maintained in grassland pastures large enough to allow free-roaming behavior and with the forage, water, and shelter necessary to sustain them in good condition. Mares and sterilized stallions (geldings) are segregated into separate pastures. About 39,000 wild horses that are in excess of the current adoption or sale demand (because of age or other factors such as economic recession) are currently located on private land pastures in Oklahoma, Kansas, Iowa, Missouri, Montana, Nebraska, Utah, Wyoming, Washington, and South Dakota. The establishment of ORPs is subject to a separate NEPA and decision-making process. Located mainly in mid or tall grass prairie regions of the United States, these ORPs are highly productive grasslands compared to more arid western rangelands. These pastures comprise about 400,000 acres (an average of about 10-11 acres per animal). Of the animals currently located in ORP, less than one percent is age 0-4 years, 49 percent are age 5-10 years, and about 51 percent are age 11+ years.

Potential impacts to wild horses from transport to adoption, sale or ORP are similar to those previously described. One difference is when shipping wild horses for adoption, sale or ORPs, animals may be transported for up to a maximum of 24 hours. Immediately prior to transportation, and after every 24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of water and two pounds of good quality hay per 100 pounds of body weight with adequate space to allow all animals to eat at one time.

A small percentage of the animals may be humanely euthanized if they are in very poor condition due to age or other factors. Horses residing on ORP facilities live longer, on the average, than wild horses residing on public rangelands, and the natural mortality of wild horses in ORP averages approximately 8% per year but can be higher or lower depending on the average age of the horses pastured there (GAO-09-77, Page 52).

Wild Horses Remaining or Released Back into the JMA following Gather Under the Proposed Action and Alternative B,
The wild horses that are not captured may be temporarily disturbed and may move into another area during the gather operations. With the exception of changes to herd demographics and their direct population- wide impacts from a gather have proven, over the last 20 years, to be temporary in nature with most if not all impacts disappearing within hours to several days of when wild horses are released back into the HMAs.

No observable effects associated with these impacts would be expected within one month of release, except for a heightened awareness of human presence, and possible changes in specific band composition. There is the potential for the horses that have been desensitized to vehicles and human activities to return to areas where they were gathered if released back into HMAs. The wild horses that remain in the Little Fish Lake JMA following the gather would maintain their social structure and herd demographics (age and sex ratios) as the proposed gathers would mainly be targeting specific individual or bands of horses. No observable effects to the remaining population from the gather would be expected.

No Action Alternative
Under the No Action Alternative, no population growth suppression action or wild horse removals (gathers) would take place. The population of the wild horses within the Little Fish Lake JMA would continue to grow at the national average rate of increase seen in the majority of HMAs of 20 to 25% per year.

Neither AML or a TNEB would be achieved, and excess concentrations of wild horses would continue to impact site specific areas throughout the JMA into the future. The animals would not be subject to the individual direct or indirect impacts as a result of a trapping operation. Over the short-term, individual animals in the herd would be subject to increased stress and possible death as a result of increased competition for water and/or forage as the population continues to grow even further in excess of the land's capacity to meet the wild horses' habitat needs. The areas currently experiencing heavy to severe utilization by wild horses would increase over time and degradation could become irreversible in areas where ecological thresholds are passed.

Reasonably foreseeable trends under this alternative would result in increasing damage to rangeland resources throughout the JMA. Trampling and trailing damage by wild horses in/around riparian and impacts to rangeland resources would also be expected to increase, resulting in larger, more extensive areas of poor range condition, some of which might be unable to recover even after removal of excess horses. Competition for the available water and forage among wild horses, domestic livestock, and native wildlife would continue and further increase.

Wild horses are a long-lived species with survival rates estimated between 80 and 97% and may be the determinant of wild horse population increases (Garrott and Taylor, 1990, Ransom et al., 2016). Predation and disease have not substantially regulated wild horse population levels within or outside the project area. Throughout the HMAs few predators exist to control wild horse populations. Some mountain lion predation occurs but does not appear to be substantial, as evidenced by the continued high growth rates in the herds. Coyotes are not prone to prey on wild horses unless the horses are young, or extremely weak. Other predators such as wolf or bear do not inhabit the area in high enough numbers to cause an effect on horse growth rates. Being a non-self-regulating species (NRC, 2013), there would be a steady increase in wild horse numbers for the foreseeable future, which would continue to exceed the carrying capacity of the range. Individual wild horses would be at risk of death by starvation and lack of water as the population continues to grow annually. The wild horses would compete for the available water and forage resources, affecting mares and foals most severely. Social stress would increase. Fighting among stud horses would increase as well as injuries and death to all age classes of animals as the studs protect their position at scarce water sources. Significant loss of the wild horses in the JMA due to starvation or lack of water would have obvious consequences to the long-term viability of the herd. Allowing wild horses to die of dehydration and starvation would be inhumane treatment and would be contrary to the WFRHBA, which mandates removal of excess wild horses.

The damage to rangeland resources that results from excess numbers of wild horses is also contrary to the WFRHBA, which mandates the Bureau to "protect the range from the deterioration associated with overpopulation", "remove excess animals from the range so as to achieve appropriate management levels", and "to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area." Once the vegetative and water resources are at critically low levels due to excessive utilization by an overpopulation of wild horses, the weaker animals, generally the older animals and the mares and foals, are the first to be impacted. It is likely that a majority of these animals would die from starvation and dehydration. The resultant population would be extremely skewed towards the stronger stallions which would lead to significant social disruption in the JMA. By managing the public lands in this way, the vegetative and water resources would be impacted first and to the point that they have

limited potential for recovery, as is already occurring in some areas hardest hit by the excess wild horses. As a result, the No Action Alternative, by delaying the removal of excess horses from specific areas that are most impacted at this time, would not ensure healthy rangelands that would allow for the management of a healthy wild horse population, and would not promote a TNEB.

As populations increase beyond the capacity of the habitat, more bands of horses would also leave the boundaries of the JMA in search of forage and water, thereby increasing impacts to rangeland resources outside the JMA boundaries as well. This alternative would result in increasing numbers of wild horses in areas not designated for their use and would not achieve a TNEB.

Population Modeling

Population modeling was completed for the proposed action and alternatives to analyze how the alternatives would affect the wild horse populations. Analysis included removal of excess wild horses with no fertility control, as compared to alternatives which consider removal of excess wild horses with fertility control. The No Action (no removal) Alternative was also modeled (Section 3.0 of the Supplemental Information document). The primary objective of the modeling was to identify if any of the alternatives "crash" the population or cause extremely low population numbers or growth rates. The results of population modeling show that minimum population levels and growth rates would be within reasonable levels and adverse impacts to the population would not be likely under Alternatives A and B. Graphic and tabular results are displayed in detail in Section 3.0 of the Supplemental Information document.

3.4. Riparian/Wetland Areas and Surface Water Quality

Affected Environment

Riparian areas occupy a small but unique position on the landscape in the JMA. Riparian areas are important to water quality, water quantity, and forage. Riparian sites provide habitat needs for many species and support greater numbers and diversity of wildlife than any other habitat type in the western United States. Riparian areas at high elevations support cottonwood and aspen woodlands. Small riparian areas and their associated plant species occur throughout the JMA near seeps, springs, and along perennial drainages. Many of these areas support limited riparian habitat (forage) and water flows. At the present time, wild horse use of the majority of these areas is readily evident, including trampling and trailing and excessive utilization. A decline in the quantity and diversity of stabilizing vegetation along lotic riparian areas indicates these perennial waterways are at risk of increased bank erosion and sedimentation. The current over population of wild horses is contributing to resource damage and decline in functionality of both lotic and lentic riparian areas (See Supplemental Information document, Section 7.0).

Environmental Effects

Proposed Action – To avoid the direct impacts potentially associated with the gather operation, temporary gather sites and holding/processing facilities would not be located within riparian areas. The amount of trampling/trailing would be reduced. Utilization of the available forage within the riparian areas would also be expected to be reduced to within allowable levels. It is reasonably foreseeable that over the longer-term, continued management of wild horses within the established AML would be expected to result in healthier, more vigorous vegetative communities. Hoof action on the soil around unimproved springs and stream banks would be lessened which should lead to increased stream bank stability and decreased compaction and erosion. Improved vegetation around riparian areas would dissipate stream energy associated with high flows and filter sediment that would result in some associated improvements in water quality. There would also be reduced competition among wildlife, wild horses, and domestic livestock for the available water.

Alternative B – Environmental effects and reasonably foreseeable trends under this alternative would be similar to the Proposed Action.

No Action Alternative – With the No Action Alternative, wild horse populations would continue to increase within the JMA and to expand beyond the JMA boundaries. Increased horse use within and outside the JMA would present additional adverse impacts to riparian resources and their associated surface waters. It is reasonably foreseeable that, over the longer-term, as native plant health continues to deteriorate and plants are lost, streambank erosion would increase. An opportunity to make progress toward achieving and maintaining riparian areas in properly functioning condition would be foregone as increasing numbers of wild horses continue to trample and degrade other riparian areas, springs and associated water sources. Riparian areas that are currently in a Functional at Risk with a Downward Trend state would be expected to decline to a Non-Functional state over time.

3.5. Wildlife, Including Migratory Birds

Affected Environment
The Little Fish Lake JMA provides habitat for many species of wildlife, including large mammals like mule deer, pronghorn antelope and Rocky Mountain elk. Habitat for mule deer occurs throughout the JMA. The majority of the JMA is yearlong pronghorn antelope habitat. The Monitor and Hot Creek Ranges are Rocky Mountain elk habitat.

Predominant habitat types within the JMA which are likely to support migratory birds include: aspen, mountain riparian, mountain shrub, sagebrush, pinyon/juniper, salt desert scrub, playa and cliffs/talus habitat types. There are small inclusions of coniferous forest and mountain mahogany habitat types included in the upper elevations of the Hot Creek and Monitor Ranges.

The migratory bird nesting season is from March 1 through July 31 (including raptors). No surface disturbing activity (staging, trapping, or corrals) can be conducted during this time period without a nesting bird survey of the proposed project area.

Environmental Effects
Proposed Action – Individual animals of all species may be disturbed or displaced during gather operations. Large mammals and some birds may run or fly (flush from the nest) during helicopter operations, but animals should return to normal activities post disturbance. Small mammals, birds, and reptiles would be displaced at staging areas. Overall, there would be no impact to wildlife and migratory bird populations as a result of gather operations.

The use of previously disturbed areas would reduce impacts to migratory birds. Any new staging, corral, and trap sites with vegetation would be surveyed for nesting birds, if gather operations were to occur during the migratory bird breeding season.

Foreseeable trends from removing wild horses would bring decreased competition between wild horses, wildlife and migratory birds for available forage and water resources as soon as the gather is completed. Over the long-term, both riparian and upland habitat conditions (forage quantity and quality) for wildlife and migratory birds would improve. Soil compaction, spring degradation and stream bank deterioration would be reduced as horse numbers decreased as a result of gather operations.

Alternative B – Environmental effects and reasonably foreseeable trends from this alternative would be similar to the Proposed Action. Over the long-term alternative B would be less effective at improving wildlife and migratory bird habitat and would require more frequent gathers to maintain AML

No Action Alternative – Wildlife would not be disturbed or displaced by gather operations under the no action alternative. However, competition between wildlife and wild horses for forage and water resources would continue and may worsen as wild horse numbers continue to increase above AML. As competition increases, some wildlife species may not be able to compete successfully, potentially leading to increased stress and possible dislocation or death of native wildlife species over the long-term.

3.6. Special Status Plant and Animal Species

Affected Environment

Several Special Status Species may potentially occur within the Little Fish Lake JMA, including several bat, reptile, avian and other special status species.

According to both the 2015 and 2019 Greater sage-grouse Land Use Plan Amendments (LUPA), portions of the Little Fish Lake JMA contains Other Habitat (OHMA), General Habitat (GHMA), and Priority Habitat Management Areas (PHMA); (Figure 3, in the Supplemental Information document). Greater sage-grouse use the majority of the Little Fish Lake JMA throughout the year for all of their seasonal habitat needs. These needs include breeding (i.e., strutting grounds or leks), nesting and early brood-rearing, late brood-rearing or summer, winter and crucial winter. Greater sage-grouse require a herbaceous understory of forbs and grass to provide nest concealment, as well as to provide a diet of forbs and insects for the adults and their chicks. Riparian areas are frequently used by greater sage-grouse for late brood-rearing habitat. There are approximately 15 known greater sage-grouse leks within or near the Little Fish Lake JMA. 2020 lek counts throughout the Tonopah Field Office showed a significant decrease in lek attendance. The presence of wild horses is associated with a reduced degree of greater sage-grouse lekking behavior (Muñoz et al., 2020). Moreover, increasing densities of wild horses, measured as a percentage above AML, are associated with decreasing greater sage-grouse population sizes, measured by lek counts (Coates, 2020). All required design features found in the 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment will be adhered to.

Areas within the JMA provide aquatic and riparian habitat for one aquatic BLM Sensitive Species, the Little Fish Lake Valley tui chub (*Gila bicolor* ssp. 6). The Little Fish Lake Valley tui chub can be found in Fish Springs and Little Fish Lake.

There is potential pygmy rabbit habitat within the JMA. Pygmy rabbits predominately inhabit tall sagebrush with deep friable soils for burrowing.

Occupied year-round desert bighorn sheep can be found in the southern portion of the JMA in the Hot Creek range.

Common special status avian species potentially found within the JMA include Golden eagle (*Aquila chrysaetos*), Ferruginous hawk (*Buteo regalis*), Burrowing owl (*Athene cunicularia*) and Pinyon jay (*Gymnorhinus cyanocephalus*).

There are two BLM sensitive plant species that have been found within or adjacent to the Little Fish Lake JMA. These are the Toquima milkvetch (*Astragalus toquimanus*) and Beatley buckwheat (*Eriogunum beatleyae*).

Environmental Effects

Proposed Action – Individual raptors and birds may be disturbed during helicopter gather operations; however, birds should return to normal activities once operations have ceased. Staging, corral and trapping locations would be surveyed for nests if operations take place during the breeding season,

minimizing impacts to avian species. Because gather sites and holding corrals would not be located where sensitive animal and plant species are known to occur, there would be no impact from the placement of facilities. Staging, holding and trap locations would not be placed near any known occurrences of Toquima milkvetch or Beatley buckwheat.

Important habitat used for greater sage-grouse strutting grounds and pygmy rabbit habitat would not be used for trap sites or staging areas. Additionally, greater sage-grouse timing restrictions identified in the Proposed Action would be applied to minimize impacts to breeding, nesting and brood-rearing birds. Water bait trapping sites that occurred on natural water sources during the late brood-rearing season would be reviewed for use by greater sage-grouse prior to use as a trapping location to minimize impacts. BLM would coordinate with NDOW if the gather could not meet any of these stipulations. Greater sage-grouse may be disturbed during the winter if gather operations were to occur during that timeframe.

Foreseeable trends from removing wild horses would be decreased competition between wild horses and special status species for available forage and water resources as soon as the gather is completed. Over the long-term, both riparian and upland habitat conditions (forage quantity and quality) for special status species would improve. Impacts from soil compaction spring degradation and stream bank deterioration would decrease as the number of horses decreased under the proposed action.

Alternative B – Environmental effects and reasonably foreseeable trends from this alternative would be similar to the Proposed Action. Over the long-term Alternative B would be less effective at improving special status species habitat than the proposed action and would require more frequent gathers to maintain AML.

No Action Alternative – Individual animals would not be disturbed or displaced because gather operations would not occur under the No Action Alternative. However, habitat conditions for all special status animal species would continue to deteriorate as wild horse numbers above the established AML further reduce herbaceous vegetative cover and trample riparian areas, springs, and stream banks. Sensitive plant species would be more likely to be grazed and trampled under the no action alternative because there would be more wild horses in the JMA.

3.7. Livestock Grazing

Affected Environment

The Little Fish Lake JMA includes the entirety of the Wagon Johnnie Allotment on BLM-managed lands, and a portion of the Wagon Johnnie Allotment on USFS-managed lands. Permitted livestock grazing use in the JMA is limited to cattle. Livestock grazing is authorized from May 16 to November 15. Livestock grazing also occurs in areas immediately adjacent to the JMA.

Table 3. Little Fish Lake Joint Management Area

Allotment	Season of Use	% of Allotment in HMA	Permitted Use (AUM)	Ten Year Average Billed AUM	Percent Actual Use of Permit
Wagon Johnnie (BLM)	Cattle 5/16 to 11/15	100%	1,216	519*	57%
Wagon Johnnie (USFS)	Cattle 5/1 to 11/15	100%	4,486	4,359*	97%

*Billed AUM may not represent actual use by cattle, but is reflective of grazing strategy in response to available forage

Permitted livestock grazing use in the Wagon Johnnie Allotment has been reduced from historic levels.

Actual use during the five-year period 1974 to 1979 was reported to average 3,172 AUM for the combined USFS and BLM Wagon Johnnie Allotment (BLM, 1981). Over the past ten years permitted use has decreased from these historical levels, and actual livestock use has generally been less than permitted use for each of the grazing allotments (Table 3). In particular, during the current drought cycle, livestock AUMs were reduced by 50% in 2020 (608 AUMs) and 85% in 2021 (196 AUMs). Over the past ten years, reductions have been in part due to persistent drought, competition with wild horses for forage, and the needs of the livestock operations.

The Wagon Johnnie Allotments (both USFS and BLM) continue to be evaluated for achievement of the rangeland health standards, and adjustments to livestock grazing are implemented as appropriate, as grazing term permits are renewed or through annual coordination between the land management agencies and the grazing permit holder. Adjustments can include livestock stocking levels, seasons of use, grazing rotations, utilization standards, and other management practices to better control livestock distribution.

Environmental Effects

Proposed Action – Past experience has shown that wild horse gather operations have few direct impacts to cattle and sheep grazing. Livestock located near gather activities would be temporarily disturbed or displaced by the helicopter and the increased vehicle traffic during the gather operation. Typically, livestock would move back into the area once gather operations cease. Under the Proposed Action, competition between livestock and wild horses for water and forage resources would be reduced over time. Forage availability and quality would improve over time as the wild horse population is brought to AML. These effects would be extended by population growth control measures. It is reasonably foreseeable that the proposed action would benefit grazing resources by decreasing competition for water and forage and improving the long-term health of the range resource.

Alternative B – The environmental effect of Alternative B will be similar to those of the Proposed Action except that it is reasonably foreseeable that gathers would be required more frequently to maintain AML, thus increasing the potential impacts to livestock.

No Action Alternative – Livestock would not be displaced or disturbed as a result of gather operations under the No Action Alternative, however, there would be continued competition with excess numbers of wild horses for limited water and forage resources. As wild horse numbers continue to increase, livestock grazing within the JMA may be further reduced in an effort to slow the deterioration of the range to the greatest extent possible.

3.8. Wilderness

Affected Environment

The Little Fish Lake JMA contains a portion of the Antelope Range and Fandango Wilderness Study Areas (WSAs). The Antelope Range Wilderness Study Area encompasses over 87,000 acres of wild and remote country. Diverse topography, vegetation, and wildlife characterize this extensive area. Important archaeological sites can be found within the WSA including Shoshone Indian wickiups and the James Wild Horse Trap, listed on the National Register of Historic Places.

The Fandango WSA is part of a wilderness complex with Morey Peak WSA and the previously mentioned Antelope Range WSA. Riparian vegetation and aspens fill the numerous canyons and draws. The perennial creeks also support brook trout and wildflowers in the spring and early summer.

The National Forest and Public Lands of Nevada Enhancement Act (Public Law 100-790) October 28, 1988, adjusted the administrative boundaries for the Humboldt-Toiyabe National Forest, placing nearly all of the Fandango and Antelope Range WSA within the new Forest Boundary. According to the law

however, this WSA must still be managed the same as BLM WSAs.

Environmental Effects
Proposed Action – Per BLM Manual 6330—Management of BLM Wilderness Study Areas, "Helicopters and fixed wing aircraft may be used for aerial surveys and for the gathering of wild horses and burros". Impacts to opportunities for solitude could occur during gather operations due to the possible noise of the helicopter and increased vehicle traffic around the WSA. It is reasonably foreseeable that those impacts would cease when the gather was completed. No surface impacts within the WSA are anticipated to occur during the gather since all gather sites and holding facilities would be placed outside wilderness. However, wilderness values of naturalness would remain at or near the current condition. Under the Proposed Action wilderness values would likely see more improvement over time since wild horse population would be gathered in increments and growth rates would be less under this alternative. Any impacts to resources within the WSAs as a result of concentrated use by wild horses would be reduced or eliminated over time as the AML and TNEB is achieved and maintained, further enhancing opportunities for enjoyment of the area by the public.

Alternative B – Environmental effects and reasonably foreseeable trends would be similar to the Proposed Action, however, wilderness values of naturalness after the gather would be enhanced by a reduction in wild horse numbers as a result of an improved ecological condition of the plant communities and other natural resources.

No Action Alternative – No direct impacts to wilderness values would occur. However, impacts to wilderness values of naturalness could be threatened through the continued population growth of wild horses and concentrated use of resources within the WSAs by wild horses. The WSA currently receives slight to moderate use by wild horses during certain times of the year. Increasing wild horse populations would be expected to further degrade the condition of vegetation and soil resources. The sight of heavy horse trails, trampled vegetation and areas of high erosion would continue to detract from the wilderness experience within the WSA. It is reasonably foreseeable that WSA values would decrease over time under this alternative.

3.9. Noxious Weeds and Invasive Non-Native Species

Affected Environment
Noxious and invasive weeds are known to exist on public lands within the administrative boundaries of the JMA. Noxious and invasive weed species are aggressive, typically nonnative, ecologically damaging, undesirable plants, which severely threaten native rangeland, biodiversity, decrease forage quality, wildlife habitat, and ecosystems. Because of their aggressive nature, noxious and invasive weeds can readily spread into established plant communities primarily through ground disturbing activities. In addition, new populations can become established when seeds are transported to new locations via equipment, vehicles, animals, and people. The only Nevada listed noxious weed known to occur within the JMA is hoary cress (*Cardaria draba*), though other species may be present. In particular, saltcedar (*Tamarix ramosissima*) is commonly found along waterways in the broader area and may be present. Other problematic nonnative species found in the JMA include cheatgrass (*Bromus tectorum*), Russian thistle (*Salsola tragus*), saltlover (*Halogeton glomeratus*) and annual mustards (*Brassica spp*.).

These species occur in a variety of habitats including roadside areas, rights-of-way, along waterways, wetland meadows, and undisturbed upland rangelands.

Environmental Effects
Proposed Action The proposed gather may spread existing noxious and/or invasive species. This could occur if vehicles drive through infestations and spread seed into previously weed-free areas or arrive

already carrying seeds attached to the vehicle or equipment. It is reasonably foreseeable gather activities could introduce new noxious weed infestations, though the risk can largely be mitigated by following weed best management practices (BMPs). The contractor, together with the contracting officer's representative or project inspector (COR/PI), shall examine proposed gather sites and holding corrals for noxious and invasive weed populations prior to construction. If state-listed noxious weeds are found, the location of the facilities would be moved. Any equipment or vehicles exposed to weed infestations or arriving on site carrying dirt, mud, or plant debris would be cleaned before moving into or within the project area. All gather sites and holding facilities on public lands would be monitored for weeds during the next several years. Despite short-term risks, achieving the established AML and removing excess wild horses offers the best opportunity for improvements in resource health over the long term and the subsequent recovery of the native vegetation resulting in fewer disturbed sites that would be susceptible to invasion by non-native plant species.

Alternative B – The environmental effect of Alternative B will be similar to those of the Proposed Action except that it is reasonably foreseeable that gathers would be required more frequently to maintain AML, thus increasing the longer-term potential of spread or introduction of noxious weeds and non-native plant species.

No Action Alternative – No impacts from the gather would occur. However, wild horse populations would remain over AML and the impacts to native vegetation from wild horse over-grazing and/or trampling, especially around water sources, would increase dramatically and impacts to the present plant communities could lead to an expansion of noxious weeds and non-native plant species.

3.10. Vegetation

Affected Environment

The Little Fish Lake JMA is located within the Central Nevada Basin and Range Major Land Resource Area (MLRA). This area is in the Great Basin Section of the Basin and Range Province of the Intermontane Plateaus. This MLRA supports saltbush-greasewood, big sagebrush, and pinyon-juniper woodland vegetation in the progression from the lowest to the highest elevation and precipitation. Shadscale, in association with bud sagebrush, spiny hopsage, ephedra, winterfat, fourwing saltbush, Indian ricegrass, squirreltail, and galleta, characterizes the saltbush-greasewood type. With an increase in moisture, plants associated with shadscale are replaced by needlegrasses, bluegrasses, bluebunch or beardless wheatgrass, basin wildrye, and forbs. Black greasewood and Nuttall saltbush are important on some sites. Big sagebrush and black sagebrush, which grows on soils that are shallow to an indurated pan or to bedrock, are dominant. In the pinyon-juniper woodland, bitterbrush, serviceberry, and snowberry grow in association with Utah juniper and singleleaf pinyon. The highest elevations support thickets of curl-leaf mountain mahogany and small amounts of mixed conifer forest with limber, or bristlecone pine. On bottom lands, basin wildrye, creeping wildrye, alkali sacaton, wheatgrasses, bluegrasses, sedges, and rushes are typical. Black greasewood, rubber rabbitbrush, and big sagebrush grow on the drier sites. Inland saltgrass, alkali sacaton, black greasewood, rubber rabbitbrush, and big saltbush typify the vegetation on strongly saline-alkali soils (NRCS, 2006).

The Little Fish Lake JMA is dominated by three naturally occurring ecological systems, as defined by the Southwest Regional Gap Analysis Project (SWREGap). Together, the Great Basin xeric mixed sagebrush shrublands, the intermountain basins big sagebrush shrublands, and Great Basin pinyon-juniper woodlands comprise approximately 90% of the total area. Some portions of the JMA have been altered as crested wheatgrass seedings.

Great Basin xeric mixed sagebrush shrublands comprise approximately 33% of the total area and occur on dry flats and plains, alluvial fans, rolling hills, rocky hillslopes, saddles and ridges at elevations between approximately 3,200 and 8,500 feet. Sites are dry, often exposed to desiccating winds, with typically shallow, rocky, non-saline soils. Within the JMA, these shrublands are dominated by black sage (mid and low elevations), low sage (higher elevation) and may be co-dominated by Wyoming big sagebrush or yellow rabbitbrush. Other shrubs that may be present include shadscale saltbush, Nevada ephedra, rubber rabbitbrush, spiny hopsage, Shockley's desert-thorn, budsage, greasewood, and horsebrush. The herbaceous layer is likely sparse and composed of perennial bunch grasses such as Indian ricegrass, squirreltail, or Sandberg bluegrass (Lowry, et al., 2005).

Intermountain basin big sagebrush shrublands comprise approximately 32% of the area on the broad basin between the mountain ranges, plains, and foothills between approximately 4,900 and 7,500 feet in elevation. Soils are typically deep, well-drained and non-saline. These shrublands are dominated by basin big sagebrush and/or Wyoming big sagebrush. Scattered juniper, greasewood, and saltbushes may be present in some stands. Rabbitbrush co-dominates some disturbed stands. Perennial herbaceous components typically contribute less than 25% vegetative cover. Common graminoid species include Indian ricegrass, needle-and-thread grass, basin wildrye, galleta, or Sandberg bluegrass (Lowry, et al., 2005).

Great Basin pinyon-juniper woodlands comprise approximately 25% of the JMA. This ecological system occurs on the dry mountain ranges and foothills, at elevations ranging from 5,250 to 8,500 feet. These woodlands occur on warm, dry sites on mountain slopes, mesas, plateaus, and ridges. Severe climatic events occurring during the growing season, such as frosts and drought, are thought to limit the distribution of pinyon-juniper woodlands to relatively narrow altitudinal belts on mountainsides. Woodlands dominated by a mix of pinyon and juniper, pure or nearly pure occurrences of pinyon, or woodlands dominated solely by juniper comprise this system. Curl-leaf mountain mahogany is a common associate. Understory layers are variable. Associated species include shrubs such as Greenleaf manzanita, low sage, black sage, big sagebrush, or littleleaf mountain mahogany. Common herbaceous component includes bunch grasses needle-and-thread and basin wildrye (Lowry, et al., 2005).

In summary, based on available monitoring data an excess number of wild horses in the Little Fish Lake JMA are contributing to the over utilization of key species such as Indian ricegrass, winterfat, and crested wheat grass. Current vegetative conditions in the HMA, such as reduced cover of key grass species and a transition to a less desirable shrub dominated plant community has forced wild horses onto private property inside the JMA. Impacts to private property include damage to fences, water developments, and degradation of private meadows and springs.

Environmental Effects

Proposed Action:

The Proposed Action is expected to influence small areas of vegetative resources through trampling by wild horses at gather sites and holding locations and crushing of vegetation by vehicles, at temporary corrals and holding facilities. These disturbed areas would be less than one acre in size. Gather corrals and holding facility locations are usually placed in areas easily accessible to livestock trailers and standard equipment, utilizing roads, gravel pits or other previously disturbed sites and accessible by existing roads. No new roads would be created. These impacts are temporary, and it is reasonably foreseeable vegetation would recover within the next growing season.

Achieving and maintaining the established AML would benefit the vegetation by reducing the grazing pressure on the forage resources. Defoliation that occurs more than once in a growing season reduces a plant's ability to maintain plant health and reproduce (Herbel, 2004). The impacts to vegetation by

reducing grazing or trampling associated with bringing wild horse numbers to AML would result in maintaining or improving plant health, reproduction, diversity, and composition by allowing the plants to maintain and continue photosynthetic processes to initiate regrowth for recovery and grow adequately for reproduction. Achieving and maintaining the established AML throughout the JMA would be expected to result in upward trends in vegetation health, increased vigor, production and frequency of key forage species, and attainment of Rangeland Health Standards.

Alternative B- The environmental effect of Alternative B will be similar to those of the Proposed Action except that it is reasonably foreseeable that gathers would be required more frequently to maintain AML, thus increasing the frequency of potential plant disturbance associated with gather activities.

No Action Alternative – No impacts from the gather would occur. Wild horse populations would continue to exceed AMLs. The impacts to vegetation by grazing or trampling would increase and would result in deterioration in plant health, reproduction, diversity, and composition. By reducing opportunities for photosynthetic processes, the vegetation, particularly desirable forage species, would be susceptible to over-grazing and other stressors, such as drought. This disturbance would ultimately lead to a decrease in desirable forage species and an increase in less desirable species, and an alteration of the overall species composition for the area. It is reasonably foreseeable the decreased availability and quality of forage resources would negatively impact wild horse body condition scores and health.

3.11. Soils/Watersheds

Affected Environment

Soils within the JMA are typical of the Great Basin and vary with elevation. Soils range in depth from very shallow (below 20 inches to bedrock) to deep (greater than 60 inches to bedrock) and are typically gravelly, sandy and/or silt loams. Soils that are located on low hill slopes, upland terraces, and fan piedmont remnants are typically shallow to deep over bedrock or indurated lime hardpan and derived from parent material of volcanic origin. They are highly calcareous and medium textured with gravel. Soils on mountain slopes are also calcareous and range from shallow to deep over limestone. Some of the mountain soils have high rock fragment content, and support pinyon and juniper trees. Mountain soils typically have gravelly to very gravelly loam textures. Soils on floodplains and fan skirts are deep, have silt textures, and are highly calcareous.

The JMA contains portions of two different 10-digit Hydrologic Unit Code (HUC) watersheds. Both watersheds are located in the Great Basin Region, Central Nevada Desert Basins Subregion, Hot Creek-Railroad Valleys Sub-basin, HUC 16060012. The majority of the JMA is in the Little Fish Lake Valley 10-digit HUC watershed, 1606001202, and a small portion of the northern extent is within the Sevenmile Wash 10-digit HUC watershed, 1606001201 (USGS, 2020).

Environmental Effects

Proposed Action- Project implementation would involve use of existing roads, washes and horse trail areas, and would disturb relatively small areas used for gathering and holding operations. Horses may be concentrated for a limited period of time in traps and at holding corrals. Potential for soil compaction exists but would be minimal and temporary and is not expected to adversely impact soil or hydrologic function. It is reasonably foreseeable soils and watersheds would remain at or near the current condition. However, soils and watersheds would likely see more improvement over time with the achievement of AML and reduction of concentrated use of resources by wild horses including trailing and trampling; as well as reduced utilization levels and healthier plant communities. since wild horse population would be gathered in increments and growth rates would be less under this alternative.

Alternative B- The environmental effect of Alternative B will be similar to those of the Proposed Action except that it is reasonably foreseeable that gathers would be required more frequently to maintain AML, thus increasing the frequency of plant and soil disturbance associated with gather activities.

No Action Alternative- Soils and watersheds would continue to experience concentrated use by wild horses. As horse populations continue to increase heavy trailing and trampling around water sources and to foraging areas would further increase beyond current levels. Watershed objectives would not be met due to increased horse populations over time.

4.0 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

The past, present, and reasonably foreseeable future actions applicable to the assessment area are identified as the following:

Project -- Name or Description	Status (x)		
	Past	Present	Future
Issuance of multiple use decisions and grazing permits for ranching operations through the allotment evaluation process and the reassessment of the associated allotments.	x	x	x
Livestock grazing	x	x	x
Wild horse and burro gathers	x	x	x
Mineral exploration / geothermal exploration/abandoned mine land reclamation	x	x	x
Recreation	x	x	x
Range Improvements (including fencing, wells, and water developments)	x	x	x
Wildlife habitat improvements - Pinyon-juniper thinning	x	x	x
Wildlife guzzler construction	x	x	x
Invasive weed inventory/treatments	x	x	x
Wild horse and burro management: issuance of multiple use decisions, AML adjustments and planning	x	x	x

Any future proposed projects within the Little Fish Lake JMA would be analyzed in an appropriate environmental document following site specific planning. Future project planning would also include public involvement.

4.1 Past Actions

In 1971 Congress passed the WFRHBA which placed wild and free-roaming horses and burros, that were not claimed for individual ownership, under the protection of the Secretaries of Interior and Agriculture. In 1976 FLPMA gave the Secretary the authority to use motorized equipment in the capture of wild free-roaming horses as well as continued authority to inventory the public lands. In 1978, PRIA was passed which amended the WFRHBA to provide additional directives for BLM's management of wild free-roaming horses on public lands.

Past actions include establishment of wild horse HMAs and WHTs, establishment of AML for wild horses, wild horse gathers, vegetation treatment, mineral extraction, oil and gas exploration, livestock grazing and recreational activities throughout the area. Some of these activities have increased

infestations of invasive plants, noxious weeds, and pests and their associated treatments.

Little Fish Lake HMA
The Little Fish Lake HMA was designated for the long-term management of wild horses in the Tonopah 1984 MFP; management of this HMA is guided by the 1997 Tonopah ROD and RMP. AML for the Little Fish Lake HMA is 39 wild horses, as established in 1992 through a stipulated agreement (Consent Decision) between BLM, E. Wayne Hage, Colvin and Son Cattle Co., and Russell Ranches through the Department of the Interior Office of Hearings and Appeals, Hearings Division. This AML was subsequently confirmed by the Tonopah Resource Management Plan (RMP) approved October 6, 1997. The Land Use Plan analyzed impacts of management's direction for grazing and wild horses, as updated through Bureau policies, Rangeland Program direction, and Wild Horse Program direction. Forage was allocated within the allotments for livestock, wild horse, and wildlife use and range monitoring studies were initiated to determine if allotment objectives were being achieved, or that progress toward the allotment objectives was being made.

Little Fish Lake WHT
The Little Fish Lake WHT was originally designated as a BLM Herd Area following the passage of the WFRHBA of 1971. Public Law 100-550, the Nevada Enhancement Act, (1988) added approximately 750,000 acres to Forest System Lands in the Toiyabe National Forest from public lands managed by BLM, which resulted in the USFS assuming management responsibility for large portions of the original Little Fish Lake HMA.

The AML for the WHT is 93 and is based off the original BLM AML. The Toiyabe National Forest Land & Management Plan guides the management of wild horse in the WHT. Due to a lack of a natural barrier, horses move between the HMA and WHT regularly.

Little Fish Lake JMA
Integrated wild horse management has occurred in the Little Fish Lake HMA and WHT. Six gathers have been completed in the past on part or all of the HMAs/WHT, and future gathers would be scheduled on a 4- or 5- year gather cycle. Approximately 6,749 wild horses have been removed from the HMAs/WHT in the last 25 years; populations are thriving and have not been negatively impacted.

Adjustments in livestock season of use, livestock numbers, and grazing systems were made through the allotment evaluation/multiple use decision process. In addition, temporary closures to livestock grazing in areas burned by wildfires, or due to extreme drought conditions, were implemented to improve range condition.

The Mojave and Northeastern Great Basin RAC developed standards and guidelines for rangeland health that have been the basis for assessing rangeland health in relation to management of wild horse and livestock grazing within the Battle Mountain Districts. Adjustments in numbers, season of use, grazing season, and allowable use have been based on the evaluation of progress made toward reaching the standards.

Historical mining activities have occurred throughout the area.

4.2 Present Actions

In March of 2021, the Little Fish Lake had an estimated population of at least 291 wild horses. The expected population size in March 2022 is at least 350 wild horses (Table 1). Resource damage is occurring in portions of the JMA due to excess animals. Current BLM policy is to conduct removals

targeting portions of the wild horse population based upon age. Further, the BLM's policy is to conduct gathers in order to facilitate a four-year gather cycle and to reduce population growth rates where possible. Program goals have expanded beyond establishing a "*thriving natural ecological balance*" by setting AML for individual herds to now include achieving and maintaining healthy and stable populations and controlling population growth rates. If any alternative other than the No Action is selected, the Humboldt-Toiyabe National Forest would conduct a wild horse gather on their Little Fish Lake Wild Horse Territory concurrently with the BLM.

Though authorized by the WFRHBA, current appropriations and policy prohibit the destruction of healthy animals that are removed or deemed to be excess. Only sick, lame, or dangerous animals can be euthanized, and destruction is no longer used as a population control method. A recent amendment to the WFRHBA allows the sale of excess wild horses that are over 10 years in age or have been offered unsuccessfully for adoption three times. BLM is adding additional long-term grassland pastures in the Midwest and West to care for excess wild horses for which there is no adoption or sale demand.

The BLM and USFS are continuing to administer grazing permits and authorize grazing within the JMA. Within the proposed gather area cattle grazing occurs on a yearly basis. Wildlife use by large ungulates such as elk, deer, and antelope is also currently common in the JMA.

The focus of wild horse management has also expanded to place more emphasis on achieving rangeland health as measured against the RAC Standards. The Mojave-Southern Great Basin and Northeastern Great Basin RAC standards and guidelines for rangeland health are the current basis for assessing rangeland health in relation to management of wild horse and livestock grazing within the Battle Mountain District. Adjustments to numbers, season of use, grazing season, and allowable use are based on evaluating achievement of or making progress toward achieving the standards.

5.0 MITIGATION MEASURES AND SUGGESTED MONITORING

Proven mitigation and monitoring are incorporated into the Proposed Action through SOPs, which have been developed over time. These SOPs (Supplemental Information document Section 4.0, 5.0, and 6.0) represent the "best methods" for reducing impacts associated with gathering, handling, and transporting wild horses and collecting herd data. Hair follicle samples would be collected to continue to monitor genetic diversity of the wild horses from the Little Fish Lake JMA; additional samples would be collected during future gathers (in 10-15 years) to determine trend. If monitoring indicates that genetic diversity (as measured in terms of observed heterozygosity) is not being adequately maintained, 5-10 young mares from HMAs in similar environments may be added every generation (every 8-10 years) to avoid negative effects of inbreeding depression and to maintain acceptable genetic diversity. Samples may also be collected for genetic ancestry analysis. Ongoing resource monitoring, including climate (weather), and forage utilization, population inventory, and distribution data would continue to be collected.

6.0 CONSULTATION AND COORDINATION

Public hearings are held annually on a state-wide or national basis regarding the use of motorized vehicles, including helicopters and fixed-wing aircraft, in the management of wild horses and burros. During these meetings, the public is given the opportunity to present new information and to voice any concerns regarding the use of the motorized vehicles. Motorized Vehicle Hearing- The HQ WHB Program hosted an annual virtual public hearing on the use of motorized vehicles in the management of wild horses and burros on April 26, 2022. The lead or back-up for the lead of each BLM state office was in attendance. After a brief presentation covering the use of motorized vehicles and BLM's Comprehensive Animal Welfare Program, 18 verbal comments were made by members of the public. The BLM also

received 79 additional written comments, including letters from Wyoming Governor and Wyoming state agencies. The consensus of the comments was opposition to the use of helicopters for gathers. There were 456 views of the live hearing.

During the April 26 hearing, their comments were entered into the record. The BLM reviewed its Standard Operating Procedures in response to these concerns but determined that no changes to the SOPs were warranted because the use of helicopters and motorized vehicles has proven to be a safe, effective and practical means for the gather and removal of excess wild horses and burros from the range. Since 2012, Nevada has gathered over 40,000 animals with a total mortality of 1.1% (of which 0.5% was gather related), which is very low when handling wild animals. In accordance with policy outlined in Handbook H-4700-1 and IM 2015-152, BLM does not conduct helicopter removals of wild horses during the peak of foaling, March 1 through June 30, absent emergency conditions.

The Battle Mountain District and Austin – Tonopah Range District consulted and coordinated with Duckwater Shoshone Tribe, Ely Shoshone Tribe, Te-Moak Tribe of Western Shoshone, and Yomba Shoshone Tribe via letter on 5/5/2022, consultation and coordination are ongoing.

The Battle Mountain District BLM coordinated with the NDOW on 12/16/2021. The NDOW was supportive of gather operations within the Little Fish Lake JMA.

7.0 LIST OF PREPARERS

Battle Mountain District Office		
Name	**Title**	**Responsible for the Following Section(s) of this Document**
Brianna Brodowski	Wild Horse Specialist	Wild Horses
Brian Truax	Rangeland Management Specialist	Livestock Grazing, Vegetation
Brandon Crosby	Wildlife Biologist Specialist	Wildlife, Migratory Birds, Special Status Species
Cassandra Albush	Archaeologist	Cultural Resources
Logan Gonzales	Outdoor Recreation Planner	Wilderness, VRM, Recreation, LWC, ACEC, Wild and Scenic Rivers
Eugene Gilseth	Planning and Environmental Coordinator	NEPA Compliance
Humboldt – Toiyabe National Forest		
Lance Brown	District Ranger	Whole Document
Rixey Jenkins	Range Program Manager	Livestock Grazing; Wild Horses
James Winfrey	Land Management Planner	NEPA Compliance
Matt Morehead	Supervisory Rangeland Management Specialist	Livestock Grazing; Wild Horse

8.0 REFERENCES, GLOSSARY, AND ACRONYMS

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8.6 Acronyms

BLM-Bureau of Land Management
BIA- Bureau of Indian Affairs
CFR-Code of Federal Regulations
DR-Decision Record
EA-Environmental Assessment
EIS-Environmental Impact Statement
FLPMA-Federal Land Policy and Management Act
FONSI-Finding of No Significant Impact
HA – Herd Area
HMA – Herd Management Area
ID-Interdisciplinary
IM-Instructional Memorandum
NEPA-National Environmental Policy Act
RFS-Reasonably Foreseeable Future Action
RMP-Resource Management Plan
WHT- Wild Horse Territory