

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

Management Evaluation Report

Jackson Mountains HMA

February 2025



PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Black Rock Field Office

**Jackson Mountains Herd Management Area Plan Management
Evaluation
February 2025**

RELATIONSHIP TO STATUTES, REGULATIONS, POLICIES, OR PLANS

The current Resource Management Plans (RMPs), laws, regulations, and policies, as outlined below, set forth management goals and objectives and reaffirm Appropriate Management Level (AML) for the Herd Management Area (HMA).

2015 Winnemucca District RMP, approved 2015:

- **Goal:** “Protect, manage, and control healthy wild horse and burro (WHB) populations within established Herd Management Areas (HMAs) at Appropriate Management Levels (AMLs) in a manner designed to achieve and maintain a Thriving Natural Ecological Balance (TNEB) and multiple-use relationship on public lands.”
- **Objective WHB 1:** Administer HMAs to support healthy populations and achieve land health standards for WHB where a TNEB and multiple-use relationship can be achieved and maintained.
- **Objective WHB 2:** Maintain the free-roaming nature of WHB within HMAs.
- **Objective WHB 3:** Ensure WHB have safe, unencumbered access to water within HMAs.
- **Objective WHB 4:** Protect WHB from harm, harassment, disease, and illegal capture.
- **Objective WHB 5:** Maintain Appropriate Management Levels within HMAs.

Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA) and Associated Wilderness, and other Contiguous Lands in Nevada, approved 2004:

- **Objective:** To manage sustainable populations of wild horses in nine Herd Management Areas (HMAs) and wild burros in two HMAs consistent with the intent of the NCA Act within established AMLs to maintain a thriving ecological balance among wild horse and burro populations, wildlife, livestock, vegetation resources, and other values and uses.
- **Objective:** To maintain free roaming behavior of wild horses and burros.

Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA; BLM 2015)

- **Management Decision:**
 - MD WHB 2: Manage herd management areas (HMAs) in Greater sage-grouse (GRSG) habitat within established AML ranges to achieve and maintain GRSG habitat objectives.
 - MD WHB 4: Prioritize gathers and population growth suppression techniques in HMAs in GRSG habitat, unless removals are necessary in other areas to address higher priority environmental issues, including herd health impacts. Place higher priority on herd areas not allocated as HMAs and occupied by wild horses and burros in SFA, followed by PHMAs.
 - MD WHB 7: Develop or amend herd management area plans (HMAPs) to incorporate GRSG habitat objectives and management consideration for all HMAs within GRSG habitat, with emphasis placed on SFA and PHMAs outside of SFA.

- MD WHB 8: Consider removals or exclusion of WHB during or immediately following emergency situations (such as fire, floods, and drought) to facilitate meeting GRSG habitat objectives where HMAs overlap with GRSG habitat.
- Federal Land Policy and Management Act of 1976 (FLPMA):
FLPMA generally 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.

Wild Free-Roaming Horses and Burros Act (WFRHBA)

The statute requires the BLM to protect the range from deterioration associated with overpopulation (16 U.S.C. § 1333(b)(2)) and defines excess animals as wild and free-roaming horses and burros that must be removed from an area in order to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area (16 U.S.C. § 1332(f)). It also directs the BLM to maintain a current inventory of wild free-roaming horses and burros on public lands. The purpose of the 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 for 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) (16 U.S.C. § 1333(b)(1)).

BLM Regulations at 43 C.F.R. Part 4700

- 43 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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.

INTRODUCTION

The Jackson Mountains HMA is located in Humboldt County and lies within the Bureau of Land Management Winnemucca District. The HMA is approximately 264,974 acres of mixed public and private lands.

The HMA is within the Great Basin physiographic region, which is one of the largest deserts in the world. The Great Basin is effectively cut off from the westerly flow of Pacific moisture. Orographic uplift of crossing air masses by the Sierra and the Cascades provides cooling and precipitates much of the moisture out. The result is a Dry Steppe cold climate classification for most of the Great Basin. The climate is typical of middle latitude, semi-arid lands where evaporation potential exceeds precipitation throughout the year. Annual precipitation normally ranges from approximately five to seven inches on the valley bottoms to 16 to 18 inches on the mountain peaks. Most of this precipitation comes in the form of snow occurring primarily in the winter and spring with the summers being quite dry. Temperatures range from greater than 90 degrees Fahrenheit in the summer months to minus 15 degrees or colder in the mountains in the winter. Elevations within the Complexes range from approximately 4,000 feet to over 8,900 feet at King Lear Peak.

WILD HORSES

Wild horses can be found throughout the HMA at different times of the year. Typically, wild horses remain at upper elevations during the summer as long as the forage and water last. As these resources are depleted, or when snow drives them down (as early as September in some years), they move off the mountains and into the valleys. Here they exist on grasses such as Sandberg bluegrass (*Poa Secunda*), Squirreltail (*Elymus elymoides*), and Indian ricegrass (*Achnatherum hymenodes*). In addition to grasses, wild horses in the region have adapted to a diet of some shrubs including winterfat (*Krascheninnikovia lanata*) and saltbush (*Atriplex sp.*). However, as populations increase wild horses spend more time in the valleys. Water is very limited throughout the HMA. Primary sources include seeps, springs and livestock wells. In northwestern Nevada, wild horses foal in the spring, mostly during the months of April and May. This coincides with spring green-up affording the most nutritious forage to nursing mares and foals.

The HMA has an AML range of 130-217 wild horses. The AML range was established through prior decision-making processes through Final Multiple Use Decisions and reaffirmed through the 2015 Winnemucca District Resource Management Plan (RMP) and Record of Decision (ROD). These decisions established AMLs which are designed to maintain healthy wild horse populations and rangelands over the long-term based on monitoring data and in-depth analysis of habitat suitability.

The 2015 Winnemucca District RMP adjusted the boundary of the HMA to exclude the Desert Valley Grazing Allotment as an AML of 0 was established in this allotment per the 1982 FMUD and was also based on an in-depth analysis of habitat suitability and monitoring data as set forth in the Winnemucca District Resource Management Plan/Final Environmental Impact Statement.

Table 1 shows the current approximate HMA acreage, AML range, wild horse population, and wild horse use within the Jackson Mountains HMA.

Table 1. Jackson Mountains HMA Characteristics

Herd Management Area	Total Acres Private/Public land	AML Range	Current Population Estimate	Estimated Wild Horse Use (AUMs)
Jackson Mountains	264,974	130-217	545	6,540

Table 2 shows wild horse population estimates and removals by year. In the last decade, population inventory flights have been conducted every two to three years. During population inventory flights, population, foaling rates, distribution, and herd health data are collected. Due to the wild horse movement within the HMA and depending on the conditions on the ground when the flight is performed, wild horse numbers increase or decrease from year to year.

Table 2. Jackson Mountains HMA Population Estimates and Removals 1986-2024

Year	Pop Est	Removal
1986	215	0
1987	-	0
1988	413	0
1989	335	225
1990	98	0
1991	126	0
1992	154	0
1993	334	0
1994	519	313
1995	281	0
1996	318	0
1997	609	511
1998	312	0
1999	347	0
2000	399	0
2001	459	0
2002	672	0
2003	827	661
2004	228	0
2005	262	0
2006	305	0
2007	1,017	997
2008	167	0
2009	410	0
2010	410	0
2011	520	0
2012	774	644
2013	295	0
2014	368	0
2015	425	0
2016	523	0
2017	688	0
2018	731	0
2019	825	0
2020	906	85
2021	848	527
2022	491	0
2023	541	0
2024	545	35
Avg	716	

GENETIC DIVERSITY

It is not expected that observed heterozygosity would be greatly reduced by the Action Alternatives, and genetic monitoring would be used to identify any need for animal introductions that would increase genetic diversity in the HMA. Even if ¼ of mares at low AML are sterile (under the Preferred Alternative), the AML range of 130-217 wild horses in the Jackson Mountains HMA should provide for a relatively high genetic effective population size and correspondingly low rate of loss of observed heterozygosity that would be well below 1% per generation (after Frankham et al. 2010), which is a suggested level in the BLM WHB herd management handbook (2010). For most treated mares, currently available fertility control vaccines and IUDs are expected to be temporary contraceptives, relative to the long lifespan of a wild horse mare. Wild horse baseline genetic sampling occurred in the HMA in 2012; separate sample sets were collected from two subareas of the HMA, with 30 samples from the Bottle Creek subarea (Cothran 2013a) and 41 samples from the Jackson Mountains South subarea (Cothran 2013b). In those 2012 samples, observed heterozygosity was critically low; those values were a cause for concern at the time. Cothran (2013a, 2013b) suggested that the pattern of genetic diversity seen in the samples from the Bottle Creek subarea and South subarea suggested that each subarea may have had a time period when horses in those areas were relatively isolated, leading to some inbreeding, and he recommended augmenting each subarea with periodic introductions of new animals from other HMAs, or from the other subarea. Cothran noted that it was surprising that the observed heterozygosity levels were fairly low in the 2012 samples, considering the fairly large population size (Cothran 2013b). Cothran concluded that animals in the Bottle Creek subarea 2012 samples were “fairly distinct” from those of the South subarea; and that as a result animals from the Bottle Creek subarea might be good candidates for introduction to the South subarea (Cothran 2013b). Based on that conclusion, and on comparative patterns of allelic diversity (Table 1 in Cothran 2013a and Table 1 in 2013b) one may infer that, at the broader level of the HMA including both the Bottle Creek and South subareas, the collective herd within the entire HMA contains a greater degree of genetic diversity than was estimated for either subarea in isolation. However, the evidence at the time of the 2012 sampling indicated to Cothran that there was little movement or genetic exchange between those subareas then (Cothran 2013b). When a gather takes place under the Preferred Alternative, sampling the hair follicles of captured animals will make it possible to determine whether the observed heterozygosity has improved since 2012. It is not clear whether there has been much mixing of animals from the subareas since that time. If contemporary genetic monitoring still reveals an unacceptably low level of observed heterozygosity, fertile animals from other HMAs could be introduced from other similar herds, in keeping with guidelines from the BLM WHB herd management handbook 4700 (BLM 2010).

Because of history, context, and periodic introductions, wild horses that live in the Jackson Mountains HMA should not be considered as truly isolated populations (NAS 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 likely to be part of part of a larger metapopulation (NAS 2013) that has demographic and genetic connections with other BLM managed herds in Nevada, Oregon, California, and beyond. Specifically, the Jackson

Mountain HMA is nearly contiguous with the Blue Wing / Seven Troughs complex of HMAs, and is approximately 25 miles East of the Black Rock Range HMA, although separated by the Black Rock desert. Notwithstanding Cothran's (2013a, 2013b) interpretation that the herd may have been genetically isolated prior to 2012 sampling, geography suggests that wild horses could move in and out of the Jackson Mountains HMA. 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. Under all the action alternatives, hair samples would be collected during gathers, from at least 25 animals, to assess the genetic diversity in the HMA. 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).

It is possible for the Jackson Mountains HMA horses to have low observed heterozygosity (as was the case in the 2012 samples; Cothran 2013a, 2013b), yet to still be broadly related to a number of other BLM-managed herds across the west. Various evidence also suggests that the wild horses in the Jackson Mountains HMA are not genetically unusual, with respect to other wild horse herds. Cothran (2013a, 2013b) found that neither sample set contained any unique alleles. The samples from Bottle Creek subarea of the HMA were found to be most similar to sampled animals from Calico Mountain HMA and Granite Range HMA (Cothran 2013a), while samples from the South subarea were most similar to samples from Fish Creek HMA and Little Owyhee HMA (Cothran 2013b). This geographic diversity of HMAs which Jackson Mountain sampled horses were most similar to in 2012 provide circumstantial evidence supporting the interpretation that Jackson Mountains horses are components in a highly connected metapopulation that includes horse herds in many other HMAs. Also, the 2013 NAS report includes a table showing the estimated 'fixation index' (F_{st}) values between 183 pairs of samples from wild horse herds. F_{st} is a measure of genetic differentiation. Low values of F_{st} indicate that a given pair of sampled herds has a shared genetic background. The lower the F_{st} value, the more genetically similar are the two sampled herds. Values of F_{st} under approximately 0.05 indicate virtually no differentiation. Values of 0.10 indicate very little differentiation. Only if values are above about 0.15 are any two sampled subpopulations considered to have evidence of elevated differentiation (Frankham et al 2010). F_{st} values were not available in that 2013 NAS report for the Jackson Mountains HMA or for HMAs in the Blue Wing / Seven Troughs complex, but they were presented for the Black Rock Range East HMA and Black Rock Range West HMA, each of which were sampled in 2005, 2010, and 2011 (since that time, the Black Rock Range East and Black Rock Range West HMAs have been administratively combined into the Black Rock Range HMA). In all three sampled years, the Black Rock Range East HMA had pairwise F_{st} values that were less than 0.075 with 149 or more other sample sets. These results suggest that at least one herd that is fairly near the Jackson Mountains HMA was extremely similar to nearly four fifths of other BLM-managed herds.

RANGELAND HEALTH STANDARDS

Rangeland resources have been and are currently being impacted within the HMA due to the over-population of wild horses. The BLM has determined that wild horses are a contributing factor to not meeting the Rangeland Health Standards. Monitoring data specific to this HMA indicates that the excess number of wild horses are contributing to not meeting rangeland health standards. Wild horses and drought are having a significant negative impact on riparian area conditions in the Jackson Creek and Happy Creek systems. The risk of erosion and loss of soil structure in these areas after repeated disturbance without rest is greater than other use areas without wild horse presence.

OTHER RESOURCES

Mining

Mining has taken place in the general region since the 1860s. There are no active mines within the HMA. There is mineral exploration occurring in the southern portion of the HMA. There are expired Notices that have the right to access their project areas for reclamation. Access should not be impeded. Areas should be avoided to prevent setbacks with reclamation.

Wildlife

The HMA consists of diverse vegetation communities providing habitat for a wide array of wildlife species. There is yearlong habitat for mule deer, pronghorn antelope, and Bighorn Sheep throughout. Additionally, the HMA has some component of big game crucial winter and summer seasonal habitats. Other major wildlife species throughout the HMA include mountain lions, bobcats, badgers, jack rabbits, cottontails and a variety of other upland game birds, small mammals, and reptiles.

The HMA also provides habitat for numerous BLM Special Status Species. Greater sage-grouse habitat is found throughout the HMA and overlaps with General and Other Habitat Management Areas as delineated by the 2022 maintenance action of the ARMPA (BLM 2015). There are numerous leks throughout the area with seasonal habitat consisting of breeding, nesting, early brood-rearing, late brood-rearing and winter. Five streams within the HMA are classified as either occupied or recovery for Lahontan Cutthroat Trout. Other more common special status species include pygmy rabbit, dark kangaroo mouse, and numerous sensitive bird, bat, and reptile species.

Wildfire

Fire history within the Jackson Mountains HMA is characterized by low occurrence with the majority of them being single tree lightning fires. Within the past 40 years there have been a total of 49 total fires with one large fire (1,000 acres+) and they have been primarily within the pinyon/juniper and sagebrush ecological sites. The largest in the last 40 years (6,433 acres) burned south of Shawnee Creek.

EXISTING CONDITIONS

Since the passage of the 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). 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 include increasing fertility control, adjusting sex ratio, and collecting genetic baseline data to support genetic health assessments.

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 in keeping with the multiple-use management concept for the area. The HMA has a cumulative AML range of 130-217 wild horses which has been established through decisions as outlined in this document.

Range Resources

As outlined in multiple Final Multiple Use Decisions (FMUDs), the allowable use level for native perennial grasses, shrubs and riparian species is 50% of the current year's growth by weight, and 55% for perennial non-native seedings. Utilization will be measured at established key grazing areas or other sites representative of the dominant vegetation. Examples of key species include sandberg bluegrass, squirreltail, indian ricegrass, winterfat and saltbush. Examples of key riparian species include sedges, rushes, bluegrass species, redtop (bentgrass) and timothy.

Since the 2022 Gather EA, the HMA has had 16-30% heavy and severe use in the past two years. In 2024 utilization levels were 21% slight, 16% light, 47% moderate, 12% heavy, 4% severe.

Range Improvements (Water Developments)

There are multiple springs, seeps and water developments (some of which are historic and predate BLM) within the HMA. The BLM closely monitors the sources on public land all year. Some sources produce water year-round, but many become depleted in the summer months. High concentrations of wild horses negatively affect these primary water sources and riparian areas.

The BLM has completed range improvement projects to increase and protect water availability for wild horses, all of which have repeatedly been damaged by excess wild horses and repaired multiple times. Rangeland conditions continue to deteriorate due to the chronic overpopulation of excess wild horses within the HMA. That overpopulation, coupled with a lack of sufficient forage and water, has led to several emergency gathers. Due to lack of forage/water

resources the BLM conducted emergency gathers in 1994, 1997, 2003, 2007, 2012, 2020, 2021, and 2024.

Livestock Grazing

The HMA includes 5 livestock grazing allotments. Permitted livestock grazing use in the HMA include both cattle and sheep. Some livestock grazing occurs during all seasons. Permitted livestock grazing use has generally been reduced from historical grazing levels over the past decades in all of the allotments. This has been in part due to persistent drought, competition with wild horses for forage, and the needs of livestock operations. The BLM continues to evaluate allotments for achievement of rangeland health standards, and adjustments to livestock grazing are implemented as appropriate, as grazing term permits are renewed or through annual coordination between BLM and grazing permit holders. Livestock grazing is administered through the regulations at 43 C.F.R. Part 4100 and must be consistent with multiple use allocations set forth in RMPs. Changes to livestock grazing cannot be made with a wild horse management decision.

Livestock grazing actual use of permitted use has averaged approximately 73% in the Jackson Mountains HMA since 2018. In **Table 11** Animal Unit Month (AUM) means the amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month. 43 C.F.R. § 4100.0-5.

Table 11. Grazing Allotments

Allotment	Season of Use & Kind of Livestock	% of Allotment in HMA	Permitted Use (AUM)	2018-2024 Average AUM Use	Percent Actual Use of Permitted Use
Bottle Creek	4/1-1/31 Cattle	14%	3,434	2,560	74.5%
Deer Creek	3/1-7/31 10/1-12/31 Cattle	60%	754	636	84%
Happy Creek	4/1-8/30 10/15-2/28 Cattle	37%	3,721	2,700	72%
Jackson Mountains	3/1-2/28 Cattle	50%	8,857	7,040	79%
Wilder-Quinn	3/1-9/15 11/1-2/28 Cattle and Sheep	<1%	14,379	9,760	68%

Wild Horses

Population growth suppression measures include the administration of fertility control measures (i.e. PZP vaccines, GonaCon or newly developed vaccine formulations, IUDs) to released mares and adjustment of sex ratios to achieve a 60 % male to 40% female ratio. In addition to bringing the wild horse population to low AML, up to ¼ of the population of mares may be sterilized that would otherwise be excess animals permanently removed from the range and sent to off-range corrals for adoption/sales or off-range pastures – may be returned to the range and managed as a non-breeding population, so long as the sterilized mares do not result in the population exceeding mid-range AML.

The fertility control component will reduce the total number of wild horses that would otherwise be permanently removed from the range. Including some fertility control-treated mares and sterilized mares in the herd at mid-AML herd size would allow for management of a total wild horse population within the HMA that would be larger than low AML, while still reducing population growth rates compared to those of an untreated herd and achieving a thriving natural ecological balance.

Primary gather methods include helicopter drive and/or bait and water trapping. While it is the BLM's goal to immediately gather excess wild horses and/or gather wild horses for fertility treatment in a single gather, it is expected that not all horses can be captured because gather efficiencies rarely exceed 80-85%. As a result, a proportion of wild horses (15-20%+) in the HMA may not be captured or treated over the 10-year period of the Proposed Action. During a gather, horses are identified for removal or release based on age, gender, and/or other characteristics. 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.

Management objectives are to achieve and maintain AML within the HMA. Once AML is achieved, the BLM's goal is to implement population growth suppression fertility control vaccines (PZP, PZP-22, GONACON), manage a portion of the population as non-reproducing mares, and maintain a sex ratio of 60 % males to 40% females. Gather operations would utilize the helicopter drive trap and/or water/bait trapping were feasible.

MANAGEMENT ISSUES

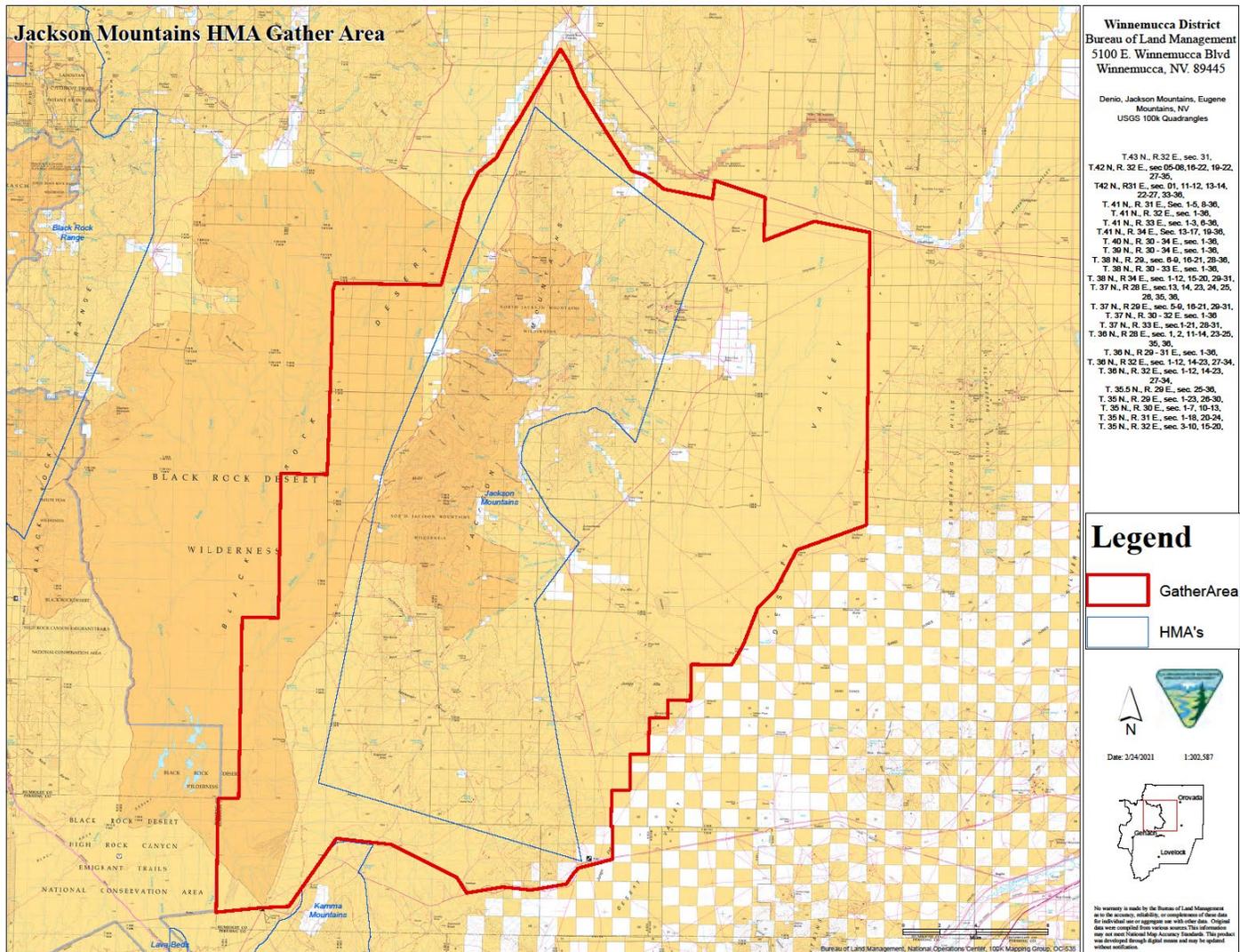
The key components for maintaining a healthy wild horse population are forage, water, cover, and space. Cover and space are plentiful for wild horses in the HMA. Forage and water availability is generally a limiting factor and is particularly limited in preferred wild horse use areas and during extended periods of severe drought coinciding with high wild horse numbers.

FUTURE MANAGEMENT

The BLM intends to prepare the Jackson Mountains HMAP to guide management of the wild horses and their habitat into the future. The HMAP will address the following management objectives:

- Manage wild horses within HMA boundaries at AML.
- Assure rangeland and riparian health.
- Utilize all population growth suppression methods.
- Improve and ensure genetic diversity.
- Maintain Greater Sage-Grouse habitat.
- Other issues as identified.

Map 1. Gather Area Identified in the 2022 Decision



Map 2. Grazing Allotments and Jackson Mountains HMA

