

HEBER WILD HORSE TERRITORY COLLABORATIVE WORKING GROUP

Final Report, DRAFT I – Summary of Findings and Recommendations

November, 2018

Introduction

Since August, 2017, Arizona State University's School of Sustainability (ASU) has convened an extended dialogue with a diverse group of stakeholder representatives about the future of the Heber Wild Horse Territory (HWHT), on the Apache Sitgreaves National Forests (ASNFs). Members of the Working Group (WG) were selected to represent interests related to management of the HWHT – wild horse advocates, ranchers, wildlife managers, equine recreation, range science and veterinary medicine. The Forest Service, Arizona Game and Fish Department, and the Arizona Department of Agriculture, have been participating as observers to the WG.

The USDA Forest Service has been tasked with the development of a Management Plan (Plan) for the HWHT, in compliance with the Wild Free-Roaming Horses and Burro Act of 1971. Following passage of the Act, the ASNFs was surveyed for wild horses, and the HWHT, covering 19,700 acres, was established near the town of Heber, Arizona (currently included within the Black Mesa Ranger District). After the 2002 Rodeo-Chediski fire, which burned approximately 23 miles of boundary fencing, large numbers of horses moved into ASNFs lands. A proposed round-up of these horses was litigated by wild horse advocates. Settled in 2007, the agreement included a halt to gathers and a stipulation to collaboratively engage the public to complete a territory management plan for the HWHT. The development of a Management Plan was viewed as critical to provide for the sustainability of the area's natural resources and for the horses of the HWHT.

ASU's collaborative Working Group is an effort to contribute to this planning process by ensuring that comprehensive perspectives have an opportunity to review and provide input to the planning effort. With support from the Forest Service and Cooperating Agencies (the Arizona Department of Agriculture and the Arizona Game and Fish Department) – ASU believed that a collaborative, citizens-based dialogue could provide important input and recommendations that would inform the development of the Plan. However, it is important to note that ASU's Working Group has no actual decision-making authority, nor does it have a formal advisory role to the Forest Service. The overall goal of the formation of the WG was to convene a diverse group of citizens to seek informed, creative, solution-oriented recommendations for consideration by the Forest Service as it makes decisions related to the HWHT management plan.

Working in cooperation with Southwest Decision Resources (SDR), ASU planned and facilitated discussions over a 15-month period, from August 2017 to October 2018. The process included 11 formal Working Group sessions (including a field visit to the Territory) and numerous smaller task group meetings and discussions. Working Group participants reviewed all relevant documents, drew on input from the Forest Service, scientific publications, and from their respective constituencies, and engaged in frank conversations to arrive at their recommendations.

This report summarizes the activities, deliberations, and outcomes of this collaborative process.

Development of the Working Group

ASU and SDR held several initial meetings with the Forest Service and Cooperating Agencies in developing plans and protocols for the Working Group, ensuring that this independent process would be consistent with, and complementary to the Forest Service's broader objectives of developing a management plan for the Territory. These draft protocols were subsequently reviewed, edited, and approved by Working Group members during an initial organizing meeting in August 2017. The text of the Collaborative Process Concept is provided in Appendix 1.

As outlined in the protocols, Working Group participants agreed on the following goals for the collaborative process:

- Provide input into the development of the proposed action (to be analyzed under the National Environmental Policy Act [NEPA] for the HWHT Management Plan and include a monitoring approach with measurable indicators and protocols for incorporating information into an adaptive management framework
- Provide a platform for learning, analysis, and discussion that strives for solution-oriented contributions to the HWHT Planning process.
- Encourage collaboration (but not necessarily consensus) in development of contributions to the HWHT planning process

ASU/SDR invited the USDA Forest Service and Cooperating Agencies to participate as observers and resource persons during Working Group deliberations. Forest Service and Cooperating Agency representatives attended WG meetings and offered periodic technical and policy information for WG consideration. However, the findings and recommendations outlined below are solely the result of WG member discussions, and they were drafted, reviewed and approved by Working Group members.

Assessment and selection of Working Group participants

Between April and July, 2017, ASU and SDR conducted 28 interviews with stakeholders and resource persons familiar with wild horse management issues, particularly those related to the Heber Wild Horse Territory. The interviews were designed to achieve two important initial goals: 1) Obtain a broader and more comprehensive understanding of issues related to wild horse management in the Territory, and 2) determine appropriate candidates for participation in the Working Group.

The interviews highlighted stakeholders' perspectives on wild horses and resource management issues on the HWHT, and provided a foundation of key themes and major insights that helped frame subsequent discussions with the Working Group. A full summary of the assessment results is provided in Appendix 2; comments are organized in the following categories:

1. History of involvement in horse management (local, regional, national levels)
2. Areas of agreement
3. Issues and challenges – Key themes
4. Information needed
5. Views of successful management

Working Group Process

As noted above, Working Group members were selected by ASU/SDR following interviews with a wide spectrum of stakeholder representatives. The selection of participants on the following criteria:

- Represents an important stakeholder group or interest
- Demonstrates knowledge and experience with wild horses and/or the Heber Wild Horse Territory
- Understands potential outcomes of the collaborative process
- Contributes a valuable perspective
- Demonstrates commitment to constructive collaboration and exchange
- Thinks creatively about the issues and potential solutions
- Contributes useful information to the process
- Accessible via email and has good access to the internet
- Available and willing to commit time to the effort
- Fills an important role within the Working Group

A list of designated Working Group members is included as Appendix 3. Not all Working Group members participated in every meeting, and their inclusion in this list does not indicate agreement to all of the recommendations, only their participation in a majority of WG meetings. As noted above, the process was not designed to achieve consensus, but to provide the broadest possible input and consideration to the Forest Service and Cooperating Agencies.

ASU convened 11 formal Working Group meetings over 15 months of deliberations, from August 2017 to October 2018 (Table 1).

Working Group Meeting	Meeting Date	General topics/meeting focus
#1	August 4, 2017	Getting started/grounding in the concept, approving working agreements/protocols
#2	September 11, 2017	Field tour of the Heber Wild Horse Territory and surrounding area
#3	October 2, 2017	FS Presentations on: Appropriate Management Level (AML) and adaptive management implications
#4	November 6, 2017	Communication, identification of priority topics for large group and task group work
#5	December 12, 2017	Press release, task group work (horse and forage), partnerships discussion
#6	January 19, 2018	Review Devil’s Garden Management Plan, second draft of task group recommendations, continued partnership discussion and initial public engagement brainstorm
#7	February 12, 2018	Working group presentations on PZP, task group presentations on work to date, Adaptive Management for HWHT presentation and discussion, public outreach discussion
#8	April 8, 2018	Visit Florence Holding and Training Facility, task group addressing comments from WG members, further public engagement discussion
#9	May 14, 2018	Presentations and finalization of task group recommendations
	June 18, 2018	Agency meeting to review and comment on task group recommendations for feedback to WG
#10	August 17, 2018	Discussion on agency feedback on task group recommendations
#11	October 15, 2018	Review final components of HWHT WG report, celebrate HWHT WG process and accomplishments

Table 1. List of Working Group meetings, dates and topics covered

ASU hosted a website (<https://heberhorsecollaborative.asu.edu>), posting relevant background documents and reports that served as a resources for the process. In addition, ASU/SDR hosted a

Google site exclusive to the Working Group, to provide access to relevant background documents, meeting agendas and notes, and drafts of WG products.

Working Group Recommendations

The following sections present Working Group findings and recommendations on: a) Desired Conditions, b) Forage Allocation and Ecosystem Health, c) Horse Population Management, d) Adaptive Management and Monitoring, and e) Partnerships and Implementation. Again, it is important to underscore that these are draft recommendations of Working Group and smaller task group deliberations, and they are presented as collective input, not consensus agreement, for consideration by the Forest Service and CAs in developing the agency-mandated planning documents. Each of the sections includes addenda with remaining questions, as well as occasional notes throughout the report that indicate whether there is unanimous (U) or partial (P) agreement among Working Group members.

DESIRED CONDITIONS RECOMMENDATIONS

A) Maintain healthy ecosystem(s)

- Habitat conditions should be informed by soil, slope and other components; utilize Forest Plan language for guidance.
- Habitat types such as pinyon and juniper, canyons, oak woodlands and grasslands to be carefully managed.
 - Pinyon and juniper habitat descriptions need clarification and distinct management (i.e. not lumped together as one habitat type).
 - Open mosaic and canyon/drainages should be managed differently as a habitat/ecosystem.
 - Grasslands/forage to be enhanced through the control and reduction of shaggy bark juniper.
- Utilize pre-settlement conditions for Ponderosa Pine as the baseline for management
- Healthy herbaceous (grass and forbs) community, commonly broken into cool and warm season species
- Maintain healthy age (young vs. old) and diversity of understory (shrub) species
- Healthy riparian ecosystem(s) and wet meadows
 - Consider trend, functionality, species composition, age class, Proper Functioning Condition (PFC) measurements (if done consistently) or Multiple Indicator Method (MIM) (which is more time consuming) – measurement of compaction, stream bank alteration, and forage utilization which could also be included as indicators for Adaptive Management
- Maintain a resilient landscape capable of supporting a healthy horse herd, healthy wildlife populations and continued livestock operation.
- Maintain functionality of soil conditions

B) Maintain a healthy population of wild horses:

- Importance of baseline information (conditions, existing numbers, etc.) before a specific AML is determined and measures can be added to determine what management actions are needed (contraception, removal, etc.)
- Develop a better understanding of the Heber Horses (such as developing and using a band book)

- Establish and maintain a known number of animals associated with the HWHT
 - Manage for public safety by reducing horse-related impacts with vehicles on Highway 260
 - Eliminate/minimize trespass horses that enter the HWHT from FAIR.
 - Develop drought management plan/emergency management plan which may include supplemental feed/watering, locations, how often, etc.
 - Utilize the Standard Precipitation Index (SPI) to monitor drought conditions.
 - Include body health scores of individuals to characterize the “healthy population of wild horses”, taking into consideration age range within a herd and overall herd condition
- C) Consider balance and equitability (under Multiple Use and Sustained Yield Act and Wild Horse and Burro Act) across forage allocation for horses, wildlife, cattle (considering what they eat, when they are there, etc.)
- D) Maintain adequate water resources
- Emergency action (severe drought) triggers water emergency actions
 - To include specifics on partnerships on who would do what, volunteer effort, partnerships (ranchers, horse advocates, etc.)
 - Consider lessons learned discussion at the WG meeting, which could feed into the HWHT plan as an emergency drought response.
- E) Support increased cooperation and communication with stakeholders
- With the White Mountain Apache Tribe
 - Encourage strong and diversified private-public partnerships
- F) Consider economic opportunities in HWHT (funding generated from horses, cattle and wildlife)

Challenges noted – for further discussion

- How do we define and operationalize the concept of “equitability”?
- We need better information about the population dynamics of the horse herd – numbers, movements, behavioral information. How can we address this knowledge gap? What resources and tools do we have to gather this information now and into the future? (e.g., iNaturalist, bioblitz).

FORAGE AND ECOSYSTEM HEALTH TASK GROUP RECOMMENDATIONS

Introduction¹

The Heber Wild Horse Territory (HWHT) is approximately 19,700 acres located on the Black Mesa Ranger District on the Sitgreaves portion of the Apache-Sitgreaves National Forests (ASNFs). With passage of the Wild Free-Roaming Horses and Burros Act of 1971, as amended (the Act), came a mandate to establish territories for the use and protection of wild horses. The HWHT was established in compliance with the Act and its subsequent implementing regulations. Regulations at 36 C.F.R. 222.61 direct the Forest Service to develop and implement a management plan for each territory. In addition, in 2007, the Forest Service entered into a Stipulation Agreement (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd487549.pdf) whereby the agency agreed to refrain from gathering and removing horses from the ASNFs until a territory management plan has been completed.

The purpose and scope of this initiative is the development of a written Management Plan for the Heber Wild Horse Territory.

Establishment of the Heber Wild Horse Territory²

With passage of the Wild Free-Roaming Horses and Burros Act of 1971, as amended (the Act), came a mandate to establish territories for the use and protection of wild horses. The regulations define wild free-roaming horses and burros as:

“Wild free-roaming horses and burros mean all unbranded and unclaimed horses and burros and their progeny that have used lands of the National Forest System on or after December 15, 1971, or do hereafter use these lands as all or part of their habitat, but does not include any horse or burro introduced onto the National Forest System on or after December 15, 1971, by accident, negligence, or willful disregard of private ownership. Unbranded, claimed horses and burros for which the claim is found to be erroneous, are also considered as wild and free-roaming if they meet the criteria above” [see 36 CFR 222.20(b)(13)].

In compliance with the law and its subsequent implementing regulations, a Territory of approximately 19,700 acres was established in the Black Canyon area of the then Heber Ranger District, see Figure 1 below.

¹ Excerpted from the Heber Wild Horse Territory Management Plan Concept Paper

² Excerpted from the Proposed Appropriate Management Level Determination (PAMLD)

Heber Wild Horse Territory

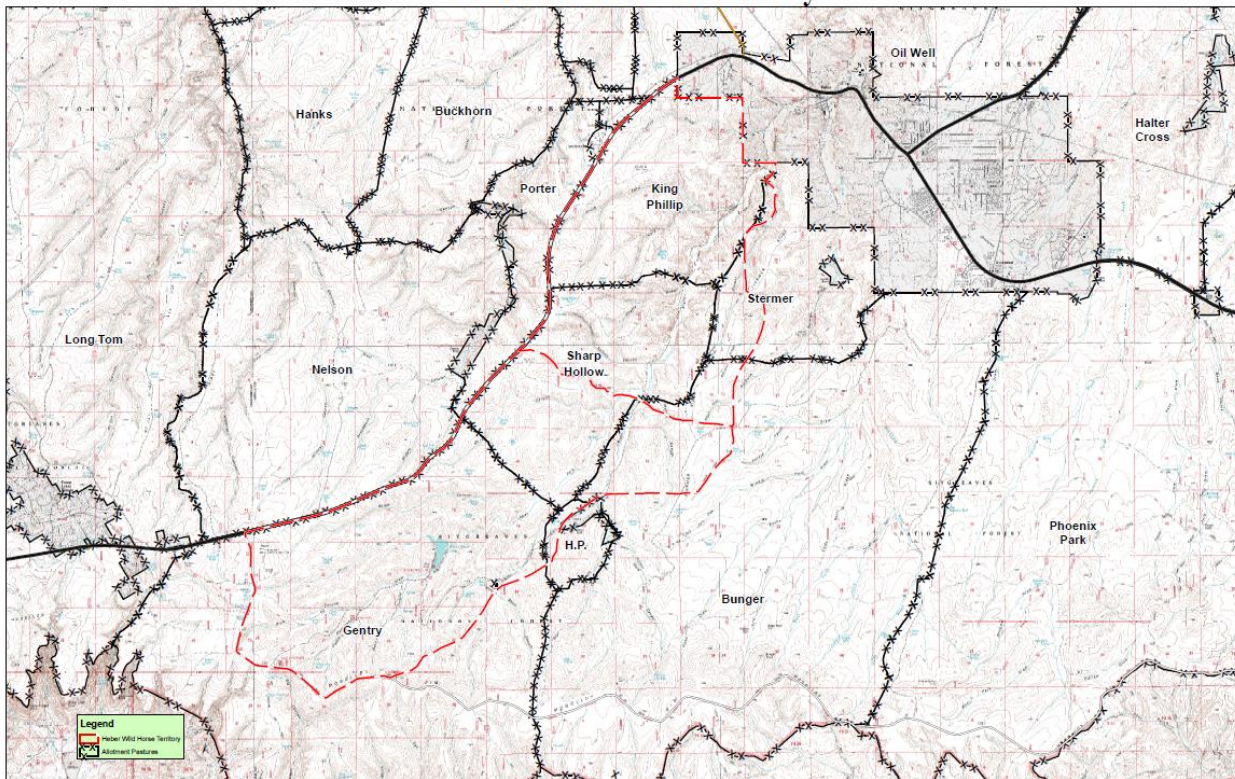


Figure 1: Heber Wild Horse Territory

The Forage and Ecosystem Health Task Group (FAEHTG) recommends the following approach to the development of a management plan for the HWHT:

Assumptions:

1. There will be no defining boundary fence for the HWHT.
2. Horses will ingress and egress from the boundaries of the HWHT onto adjacent US Forest Service lands on the Black Mesa Ranger District.
3. All horses within an agreed upon Territory Monitoring Zone (TMZ) beyond the HWHT will be considered to be members of the HWHT population, if they have use affinity to the HWHT, as determined by the Horse Population Management Task Group recommendations.
4. Data provided by the HWHT Proposed Appropriate Management Level Determination (PAML) will be reassessed using adaptive management criteria and placing less emphasis on model constraints (utilization levels and foraging distribution).

General recommendations:

- Ecosystem health will be monitored within the HWHT and the agreed upon TMZ outside of the HWHT on ASNFs lands.
- Monitoring metrics based upon adaptive management for ecosystem health will be developed.
- Livestock stocking levels and wildlife and horse numbers will be based upon trends in identified metrics of ecosystem health.
- When monitoring data and/or drought conditions are cause for downward adjustments in numbers of grazing animals (livestock, wildlife, horses) numbers will be reduced using case by case analysis

with a defined reduction strategy (to be developed by the Forest Service in collaboration with stakeholders). These reduction strategies will engage the following process:

- a. Livestock numbers reduced by the rancher per U.S. Forest Service grazing allotment standards.
 - b. Wildlife, primarily elk, are reduced by increasing the type (i.e., antlerless elk permits) and number of hunting permits in Game Management Unit 3C.
 - c. Horses are removed from the HWHT and the TMZ using approved methods.
- The HWHT will have a proactive program to retain forage capacity by managing woody species encroachment in the grassland communities. Maintaining a pre-settlement ponderosa pine forest condition in line with Four Forests Restoration Initiative (4FRI). The 4FRI forest restoration guidelines are recommended.
 - The Appropriate Management Level Determination (AML) for cover and space needs to be re-evaluated. An Alberta study (Girard, T.L., et al.2013³) of territory use by wild horse note that horses avoid forested areas and tend to gather near water sources. The Heber Wild Horse population use of forested areas in summer may have more relationship to distance from water than thermal cover requirements. The narrative in the AML cites other references that corroborate this finding. The use of wildlife thermal cover requirements of >70% canopy cover as ideal and 40-69% canopy cover as marginal for horses is not supported by any referenced studies. The recommendation by this Working Group of managing the Heber Wild Horses as an “open” territory will make identified suitable winter range south/southeast of the Territory available to horses in harsh winters and remove the lack of sufficient winter range as a limiting factor (Table 6 of AML).

Appropriate Management Level (AML)

The Proposed Appropriate Management Level Determination (PAMLD) relied on a forage allocation approach to model available forage and from that, recommended a range of horse stocking levels. Because of the assumptions underlying the model, the forage available estimates are conservative. Briefly, estimates of total forage production, 25% proper use levels and forage available on slopes and forested sites all could be adjusted upward.

- The Forage Task group recommends an update of the AML based on more current data and a consideration of increased forage allocation to 35%, and change some of the constraints in the model.

Boundaries

The HWHT will remain unfenced thereby necessitating a more comprehensive set of recommendations for horse management than previously charged by the FS. The proposed TMZ outside of the HWHT is recommended based on physical boundaries (e.g., existing pasture fences) and the corresponding aerial survey horse observations within them. The northern boundary is state highway 260 and the southern boundary is the Fort Apache Indian Reservation (FAIR); Heber-Overgaard city limits will comprise the northeast boundary. East and west boundaries will be defined using existing allotment fencing: Gentry allotment fence to the west and Bunger allotment fence to the east (Figure 2). This area will be referred to as the Territory Monitoring Zone (TMZ) and will not be included in the designated Heber Wild Horse

³ Cited Source: Girard, T.L., Bork, E.W., Neilsen, S.E. et al. Environmental Management (2013) 51: 435.

<https://doi.org/10.1007/s00267-012-9987-2> - Landscape-Scale Factors Affecting Feral Horse Habitat Use During Summer Within The Rocky Mountain Foothills.

Territory. The TMZ serves only to enhance the monitoring of movement of the horses associated with the HWHT. The horses within the HWHT and TMZ, as defined by data (as defined by the Horse Management Task Group’s recommendations: collaring, herd book, monitoring of migratory patterns, etc.) would then be managed as the Heber Wild Horse population. Decisions regarding population manipulation would occur through an adaptive management process based on measured resource conditions. Monitoring of range conditions, predicted weather patterns and annual forage utilization will be discussed.

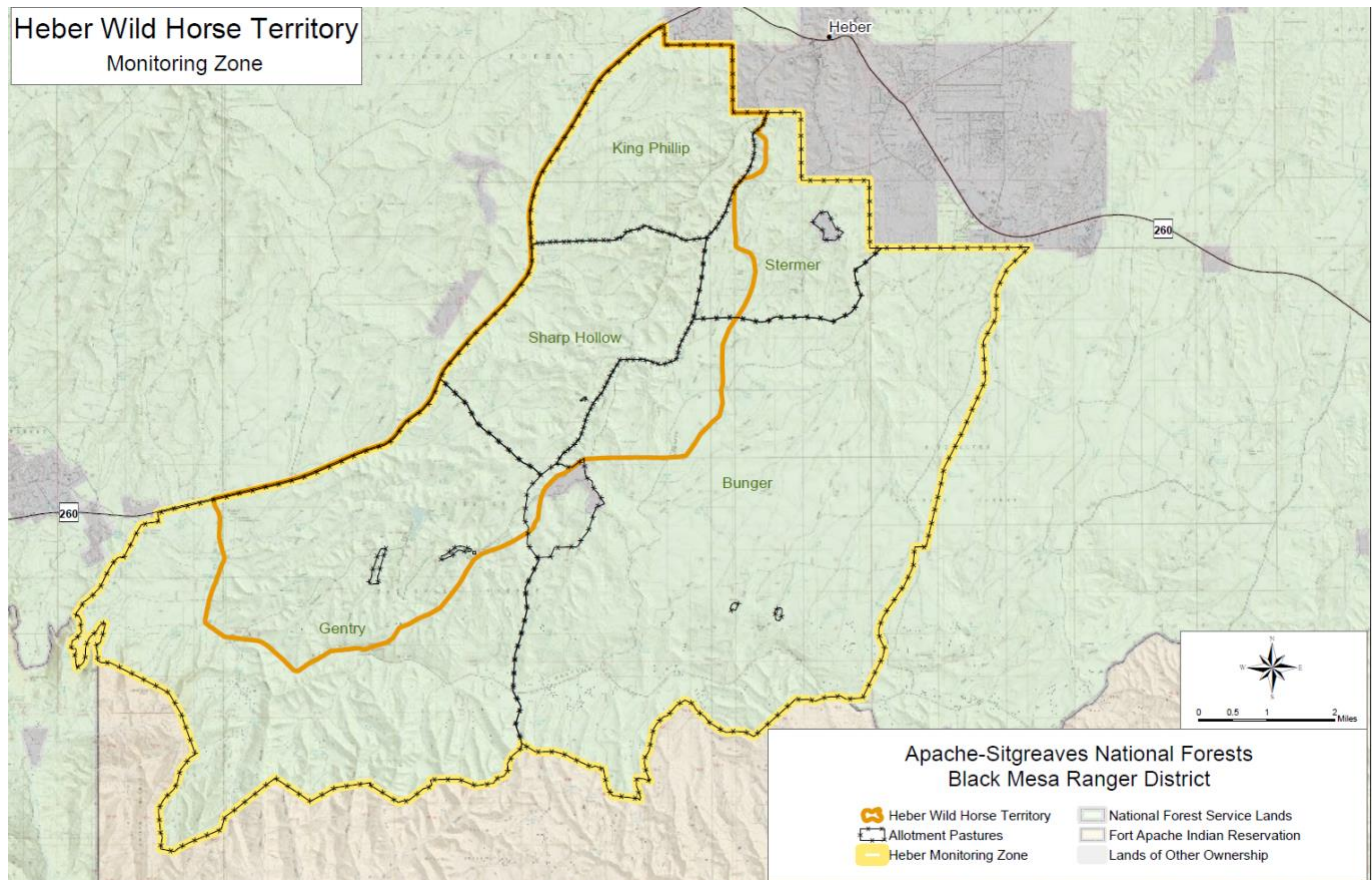


Figure 2. HWHT with Territory Monitoring Zone

The goal and objective of the TMZ is to acknowledge that there is movement of horses associated with the HWHT outside of the 19,700 acres. This is the preferred option for fencing the Heber Wild Horse Territory. Hard fencing the territory would create further barriers to horses and incur costs and disruption to the cattle rancher.

Forage Resources

Rather than adjust stocking rate estimates based on forage allocation demands for horses, we propose accepting current conditions as a starting point and using an adaptive management approach as suggested in Chapter 90 of FSH 2209.13; GRAZING PERMIT ADMINISTRATION HANDBOOK CHAPTER 90 – RANGELAND MANAGEMENT DECISIONMAKING. There are several reasons that a stocking rate adjustment may not be appropriate at this time. Legal, policy, social and biological considerations all may constrain any management actions. Before a clear protocol is agreed upon and legal and policy requirements fulfilled, it is unlikely that the FS can adjust horse populations. Further, because of the variability associated with forage availability and constraints placed on the GIS model used to estimate

AMLs, the amount of forage available is a conservative estimate of the available forage due to the components detailed above (PAMLD). Further, no variability estimates are provided in the analysis rendering any projections highly suspect. Also, available data indicate that measured utilization levels have been light (<20%) since at least 2007 indicating that forage allocation formulas may have underestimated average capacities.

There are limitations to the above approach. Continued shrub and tree encroachment is likely reducing available forage, but at an unknown rate. Additionally, drought is a natural occurrence and will at some point negatively influence grazing capacity. We suggest that implementation monitoring based on outcomes will identify and allow appropriate stocking rate adjustments over time. Horse and vegetation monitoring data are already available to begin to determine current conditions. Data interpretation will follow Figure 2 which is excerpted from USFS R3 FSH 2209.13 Chapter 90.

Management of rangelands livestock takes into consideration the estimated amount of forage a cow will eat in a day. Animal Unit Equivalency Tables prepared by the U.S. Department of Agriculture https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_051957.pdf and https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/idpmstn9390.pdf provide a way to compare between cattle, other livestock, horses, and forage consuming wildlife (elk, deer, antelope, etc.) by creating a comparative number called an Animal Unit Equivalent (AUE). Cattle grazing on Sitgreaves Forest land within the Heber Wild Horse Territory (HWHT) are cows with calves. A cow and calf to 6 months is 1.0 AUE. The two publications calculate elk to be 0.48 -0.7 AUEs and horses 0.8-2.00 AUEs. The lower numbers are being used for this analysis.

Another consideration is to know how long cows, horses, or wildlife will be in the HWHT. An assumption for this analysis is that wildlife (elk) and horses have year around access to the HWHT, and can consume forage 365 days in the HWHT.

The Apache-Sitgreaves National Forest provided the table below (Table 2) for the average amount of cattle grazing within the HWHT over the past 10 years. The unit of measure is in Animal Unit Months (AUM), and includes calculating on average how many and for how long cattle are in a pasture and what percentage of the pasture is within the HWHT. The 10-year average includes years for when a pasture is not grazed (deferred) by cattle. Pasture deferral occurs because resting a pasture for a season is often part of a planned pasture rotation. The average number of cattle Animal Unit Months in the HWHT is 495.

Pasture	AUM 10 year Average per Pasture	% of Pasture in HWHT	10 year Average days of use per pasture	10 year Average Livestock AUMs in HWHT
Sharp Hollow	99	100%	42	99
King Phillip	91	100%	37	91
Stermer	84	20.3%	38	17
Bunger	552	8.6%	52	47
Gentry	589	40.9%	50	241
Total				495

Table 2. 10 year averages of cattle grazing on pastures associated with the HWHT

For purposes of calculating what would be a shared allocation of forage resources among cows, wildlife (elk), and horses, the proposed equitable allocation for comparison is allocating the same number of AUM's for elk and horses that are currently the cattle AUMs (495). The number of adult elk and horses that would be equivalent to the number of cows is calculated from the Animal Unit Equivalent (AUE) for elk of 0.48 and 0.8 for a mature horse (Table 3). Calves and foals are with the mother and not calculated separately.

HWHT size is 19,700 acres, equivalent to 31 sections (640 acres/section). There is, on average, one cow/58 acres of the HWHT for an average of 44 days per year.

SPECIES	TIME ON HWHT	NUMBER ADULTS	Animal Unit Equivalent	AUMs in HWHT
COWS	44 days (10 year average)	337	1.0	495
ELK	12 months	86	0.48	495*
HORSES	12 months	52	0.8	495*

Table 3. Calculation of Animal Unit Equivalents

*The AUMs for elk and horses assumes an equal sharing of forage based on the permitted number of cows in the HWHT.

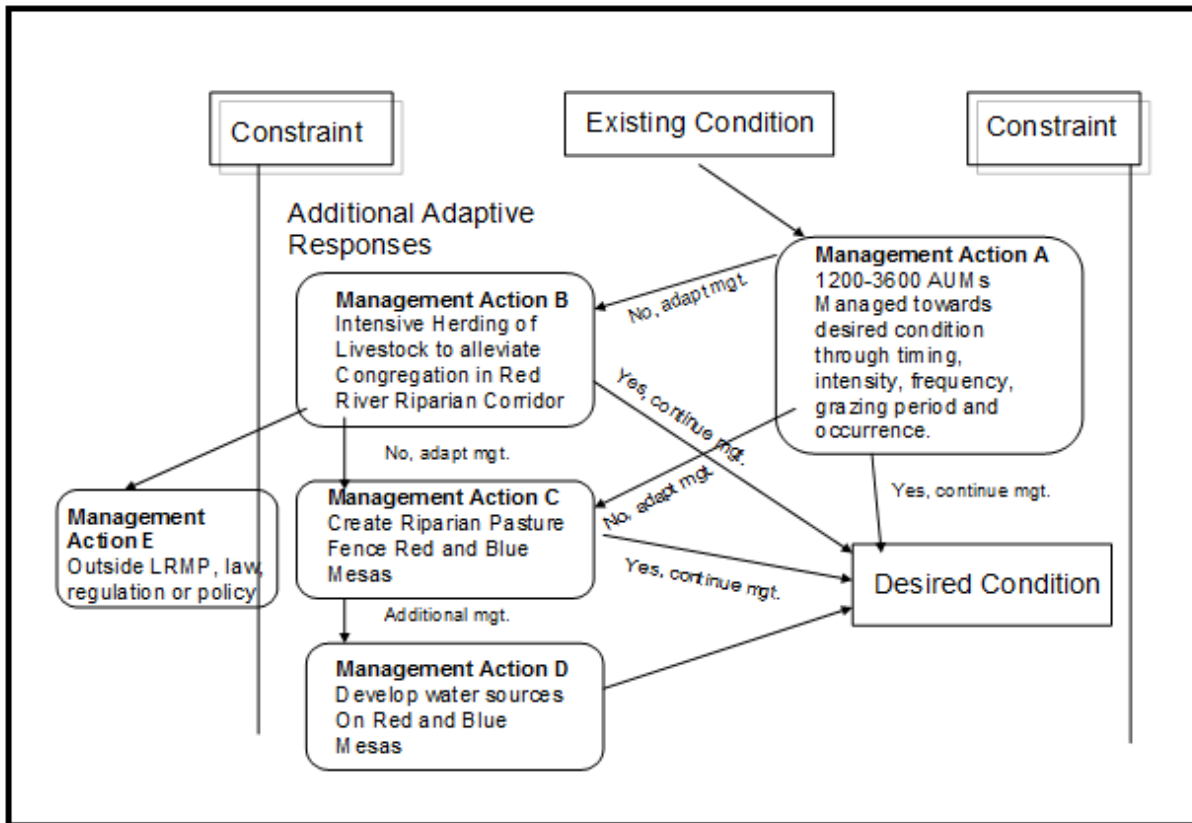


Figure 3: Adaptive Management Schematic

As previously described, stocking projections outlined in the HWHT AML are likely very conservative and based on conditions that may or may not be current. As such, adaptive management measures such as the example in Figure 3 are recommended. No adjustments to initial stocking levels for the HWHT or the TMZ are recommended until data are available to trigger adaptive management recommendations. If future monitoring data indicate resource degradation and/or habitat conditions are predicted to significantly deteriorate through adaptive management habitat assessments during extreme conditions such as extended periods of drought, stocking adjustments should be considered for the HWHT and throughout the entire TMZ. Data collection and interpretation and management decisions related to resource conditions should be a priority of the FS. In contrast to the current AML, we propose that a range of 40 to 60 resident horses be considered the management target level for the HWHT and corresponding TMZ as an initial stocking level. This range of numbers would only come into play during evidence-based destocking decisions based on resource conditions (also known as stock and monitor). Because this is a specially designated wild horse management area, we believe stocking models based on livestock grazing capacity and current range health conditions can be potentially adjusted upwards, increasing utilization guidelines to 35% within the HWHT and adjacent TMZ. Adaptive management criteria will still apply, prompting destocking decisions when deemed appropriate. The order of stocking adjustments will be determined on a case-by-case basis depending upon evidence-based analysis. Grazing animal and vegetation monitoring protocols should be in place to support specific stocking adjustments.

Due to criteria that may be identified in the HWHT NEPA and the application of various adaptive management decision criteria, current grazing permits may need to be adjusted. Therefore, it is further

recommended that during the same time-frame of the HWHT NEPA, an additional Environmental Analysis (EA) be conducted leading to an updated NEPA for both the Black Canyon and Heber grazing allotments.

In summary, the carrying capacity of the HWHT and TMZ will be established and monitored by evaluating annual forage utilization and browse assessment in designated monitoring areas along with measures to detect changes in vegetation with respect to vigor, reproduction, and plant recruitment over a period of 3 to 10 years (see Monitoring and Information Needs). This will yield information regarding degree of use that would be acceptable within representative areas both within the HWHT and TMZ, Trend in resource conditions will be objectively sampled through intermittent measurements over time. It is imperative with an adaptive management approach that mechanisms be implemented by the FS to accomplish monitoring objectives.

Existing Horse Populations

Relationship of horse use of and their fidelity to the HWHT would be defined through natural ingress and egress and may need to be monitored using telemetry collars. Horses would be free to move back and forth between the HWHT and the larger TMZ area. Monitoring procedures to estimate actual horse population numbers both within the HWHT and TMZ would incorporate aerial surveys, volunteer observations, and camera technology.

Permitted livestock grazing within the HWHT includes King Phillip, Sharp Hollow and Stermer pastures of the Black Canyon Allotment and parts of the Gentry and Bunger pastures within the Heber Allotment. Currently no horses are known to occur in the King Phillip or Sharp Hollow pastures. We propose that livestock grazing continue as exists on these allotments with the following caveats, which will likely increase management inputs by the permittee. Internal fencing will remain in place. According to the *Environmental Assessment for Management of the Jicarilla Wild Horse Territory* there is no research that supports removal of fences as an important part of wild horse management. However, all gates are to remain open when cattle are not present in a particular pasture or adjacent pasture. Gate widening should be considered to facilitate horse distribution within the Territory. These conditions will require increased coordination between the two grazing allotments. Timing of livestock use within the HWHT may need to be adjusted to facilitate horse distribution and limit the times gates are closed. Stock water sources will need to be closely monitored.

Monitoring and Information Needs

The following recommendations apply to both the HWHT and the TMZ; however, due to the nature of its designation, more intensive sampling (i.e., increasing the number of designated monitoring areas) will be applied to the HWHT. The exact level of increased monitoring will be determined during the NEPA process.

Designated Monitoring Areas

Designated Monitoring Areas (DMAs) will be identified based on existing monitoring locations throughout the TMZ and in each pasture within the HWHT. Further analysis of current monitoring is needed before an appropriate number of monitoring areas can be recommended. Additionally, critical areas such as riparian/meadow locations and Mexican Spotted Owl – Protected Activity Centers (MSO PACS) should be included. Existing exclosures, such as the elk exclosure at the West Fork, will be identified and incorporated into the monitoring plan. Monitoring strategies will be utilized in an attempt to identify the levels of utilization by cattle, elk and horses. Again, it is the responsibility of the FS to

make these determinations. It may be prudent to establish a monitoring committee, similar to the original forage monitoring groups organized to mitigate elk-cattle conflicts. An excellent example of a successful public-private monitoring team is the Forage Resource Study Group (FRSG) that monitors forage resources on USFS, private, and Arizona State Trust lands grazed by ranches within the Diablo Trust on the Coconino National Forest. This is the longest consistent utilization monitoring program in Arizona and is performed twice annually. Monitoring plots built by the USFS in the 1940s have been systematically revisited. Instrumentation includes rain gauges, utilization cages and mapping, photo plots, condition and trend transects, and a wildlife census. <http://www.diablotrust.org/science/>

Range/ecological conditions

DMA's would be monitored as often as funding allows, but at least every 3-10 years using established and accepted methods for assessing vegetation conditions. Current monitoring protocols include plant species frequency, soil cover, Parker 3-step, line intercept and Daubenmire plots. New locations would mirror existing FS monitoring protocols.

Forage Utilization

Forage utilization would be monitored annually on each DMA. Methods and interpretation would conform to those described in the Interagency Technical Reference 1734-3 and AZ 1375. Seasonal utilization estimates may be employed during the spring and summer in order to help discriminate among grazing animals. Unfortunately, utilization guidelines cannot be employed for seasonal utilization because there is no known consistent relationship between seasonal utilization estimates and utilization based on the entire growing season's forage production. Enclosures and pastures scheduled for seasonal rest may be used to help with these determinations.

Drought

The strong force exerted by climate on forage conditions is well known and likely the primary driver of ecological conditions. Thus, an increased emphasis on climate monitoring is essential. Precipitation is the key variable in assessing drought status and tracking changes in drought conditions. Because precipitation is highly variable in space and time we recommend a network of simple, inexpensive accumulation gauges be established in all key monitoring areas on the HWHT. Accumulation gauges are easy to construct with materials and tools easily available at any local hardware store (https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1747-2017_0.pdf).

The Standardized Precipitation Index (SPI) or its successor will be used to define and represent the severity of drought conditions and therefore potential available forage. SPI values are available monthly from the Western Regional Climate Center at www.wrcc.dri.edu. However, more localized conditions may be determined and interpreted using <https://myraingelog.arizona.edu/>. The online data management tool, myRAINgeLog is specifically designed for ranchers and land managers to collect and interpret cumulative precipitation observations at remote sites. The account-based tool allows users to collect, manage and analyze multiple gauges and share observations through a public mapping feature. Custom reports can be generated for each gauge with accompanying charts of observations against historical climate conditions and summaries of field notes and photos entered by the user.

We recommend the Standardized Precipitation Index (SPI) to represent the severity of drought because the drought policy of Forest Service Region 3 uses SPI as a trigger: "In the Southwestern Region, anytime the SPI reaches a value of minus 1.00 or less for the preceding 12-month period, grazing allotments should be evaluated for existing drought conditions" (R3 Manual Supplement to 2209.13.19.1). SPI

values of positive 1.0 or more for the past 12 months signal the end of drought. We also recommend that SPI values be calculated separately for summer (June-July-Aug-Sept) and winter (Oct-May). <https://cals.arizona.edu/droughtandgrazing/>

Additionally, emergency measures may need to be taken during severe droughts. These may include water hauling and even supplemental feeding. Protocols and responsibilities for these measures should be developed.

Adaptive Management

The following criteria would trigger a potential need for an adjustment in cattle, elk and horse numbers:

1. When SPI reaches a value of minus 1.00 or less for the preceding 12-month period, grazing allotments should be evaluated for existing drought conditions. At this time, forage production would be sampled in key areas to help determine whether destocking should be considered. Forage production levels of <50 pounds per acre would trigger management actions. Under these circumstances, livestock management inputs (season of use, rotational grazing, on and off dates) would be adjusted first, based on AOI discussions. Further destocking decisions may be warranted depending upon system response.
2. Forage utilization in key grazing areas exceeding 35% utilization on over 30 percent of the key monitoring areas for two consecutive years or any 2 years out of 5 (Holechek, Jerry L. 1988. An Approach for Setting the Stocking Rate. Rangelands 10(1): 10 – 14.). Use of utilization to adjust stocking rates should be based on measurement of utilization made in the fall on ranges grazed by livestock during the growing season. Attempts to identify specific utilization by cattle, elk and horses may inform destocking decisions.
3. Key grazing areas are sampled for range/ecological conditions and show that range and soil stability conditions are trending downward for 3 measurement periods (3-10 years).

When any of the 3 conditions stated above are reached and the number of horses exceeds 60 residents, or upper limit of the new AML⁴, within the HWHT and TMZ (determined generally by aerial survey and volunteer participation), horses should be removed from the area. Recent case law⁵ has stated that exceeding the AML should not be the sole criteria to removing horses.

Factors such as resource condition and trend based on monitoring data, animal health and animal welfare should be considered in combination with population factors. Methods to determine resident

⁴ This recommendation (60 horses, or upper limit of the new AML) does NOT have unanimous agreement within the Forage Allocation and Ecosystem Health Task Group.

⁵ 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).

horse numbers within the HWHT and TMZ must be developed. Even horses that are considered resident will likely move in and out of the HWHT and TMZ. Decision factors to define resident and transitory horse numbers, in terms of AUM's, will also need development.

Fencing and other Improvements

As previously stated, internal fencing will remain in place. Internal gates will remain open when cattle are not present in a particular pasture or adjacent pasture. In some locations, cattle guards may need to be installed. Public education and partnership programs should be developed to help insure gates and fences are providing the functions identified in the planning process. Gate widening should also be considered to facilitate horse distribution within the HWHT and TMZ.

Monitoring of horse movement is recommended to determine site specific recommendations as evidenced by restricted horse movement. Not all gates will need to be widened and not all cattle guards should be covered.

A process should be developed to determine where and when gates will be left open. Additionally, responsibilities for monitoring gate positions will need to be assigned. Such considerations may be addressed in the "Partnership" recommendations.

Additional consideration should be given to both increased maintenance and relocation of the southern boundary fence. Relocating portions of the southern boundary fence to Forest Road 300 would facilitate maintenance. This action would create a new pasture south of Forest Road 300 and the FAIR boundary. In order to restrict horse movement and address safety concerns along Highway 260, additional new fencing is recommended where there currently is no fencing. The FS and volunteer groups should provide additional support to the Permittees for fence maintenance and to ensure that gates are open when they should be open and closed when they should be closed. (see Partnerships section below)

Vegetation Restoration

An aggressive thinning program should be developed and proposed within the entire HWHT and TMZ in line with the "Four Forests Restoration Initiative" (4FRI) forest restoration guidelines. Initial projects should focus on reducing alligator juniper invasion in the pine forest type. More importantly is reducing woody plant invasion into grassland vegetation types. Forest Service Desired Future Conditions may inform projects. High priority projects should be included in the HWRT NEPA document.

HORSE POPULATION MANAGEMENT TASK GROUP RECOMMENDATIONS

Introduction

Management of wild horses in the Heber Wild Horse Territory (HWHT) is governed by the Wild Free-Roaming Wild Horses and Burros Act of 1971 (Public Law 92-195), as amended, 36 Code of Federal Regulations (CFR) 222 Subpart D (Management of wild Free-Roaming Horses and Burros), Forest Service Manual 2200 (Range Management) and Chapter 2260 (Wild Free-Roaming Horses and Burros.)

The HWHT Collaborative Proposal serves to document the goals, objectives, and collaborative recommendations to the final Heber Wild Horse Management Plan as they relate to wild horses in the

Heber Wild Horse Territory as well as directly surrounding areas within USFS jurisdiction where additional horses reside.

These proposed recommendations are intended to provide input into the recommendations for a Heber Wild Horse Territory Management Plan. The proposal may be amended or revised as necessary to reflect changed conditions by reaching out to collaborative participants as needed for consultation. Any such changes should be made after supplemental NEPA Analysis, additional data on horse population and movement is available, and if a sudden extreme condition (such as forest fire, disease issues, etc.) were to occur requiring immediate action.

Executive Summary

The HWHT Collaborative effort split into two task groups to better drill down on key focus areas of forage and horse management. This portion of the proposals reflects the Horse Population Management Task Group (HPMTG) of Working Group participants who volunteered for this topic. Participants in the Horse Management Group recognize the need to meet USFS stated objectives to establish balanced use between permitted horses, livestock, and wildlife as part of the multi-use plan. Understanding that the horses should receive priority use of the HWHT, which has been prevented by livestock fencing over most of the territory for an extended period of time, the Horse Management Group will also include options to allow for the reintroduction of horse use in the HWHT.

The Horse Management Group also recognizes that the horses are the only component under USFS supervision currently that does not have a management plan, which could create an imbalance in forest resource use at some point in the future that could be disruptive long-term. For this reason, it is recognized that active management of the wild horses is a required component of the final management plan and the HPMTG sought to document considerations and recommendations with this in mind.

After extensive information gathering on a number of key questions regarding the horses, there were several key areas that the HPMTG explored in detail:

- a) **Location and history** – Establishing the scope of the territory, horse herd, and initial considerations
- b) **Data collection for adaptive management** – Establishing an understanding of current population and migratory patterns of horses in the territory through monitoring programs with recommended humane methodologies.
- c) **Living conditions** – Defining the scope and limitations of the defined management area, fencing practices, migratory pattern due to changes in weather or forage, etc.
- d) **Population management** – Appropriate and effective population management practices that will allow for humane treatment of horses, prioritizing least invasive and least herd disruptive techniques wherever and whenever possible. This includes gathering, birth control methods, and other methods.
- e) **Genetic Diversity** – Ensuring herd health through genetic diversity, distribution of age and gender.
- f) **Removal Methods and Post-Removal Support** – Establishing public/private partnerships to assist with best practice where removal and adoption techniques are required. This includes exigent circumstances where sick, lame, or injured horse pose a public safety issue.

The Horse Population Management Task Group agreed on some basic principles involving these horses and the recommended actions:

- a) Horses should have priority use for the HWHT and measures should be taken to allow for them to make use of the entire HWHT as much as possible.

- b) A management plan will be created using adaptive management principles to support the objectives and recommendations presented by the Task Group.
- c) Population management should be prioritized by the least invasive and least disruptive methods to horse bands and horse behavior.
- d) All management activities should give top priority to humane and safe treatment of the horses with defined appropriate oversight of treatment.
- e) Any hands-on management action (e.g., contracted gather, contraception delivery, etc.) with the horses should be done in a manner of public/private partnership to ensure humane and appropriate outcomes.
- f) Private horse advocacy groups and agency partnerships should be leveraged where resources are not publicly available to accomplish management goals, especially where horse population control measures or removals are required.
- g) Horses are free roaming and not confined to the territory so it is important that the adaptive management plan account for horse bands that may move in and out of the territory or live in the areas just outside the territory

In most cases, the group unanimously agreed upon what is recommended in this proposal. When there was partial agreement sections were indicated with a (P) and an explanation is provided. As much as possible this document will attempt to capture varying perspectives with rationale, or, identify where the group was aligned.

Location and History

Based on the information provided to the HPMTG, there are several relevant background factors that helped form the recommendations unique to this management area. The Heber Wild Horse Territory (HWHT) is located on the Sitgreaves National Forest in the Apache-Sitgreaves National Forests which is adjacent to Fort Apache reservation and other public lands. The Territory is made up of approximately 19,700 acres of federal land in the Black Mesa Ranger District. The territory overlays two livestock allotments named Black Canyon and Heber with the Black Canyon allotment having a 60% overlay and the Heber allotment having a 6% overlay with HWHT. The boundary of the HWHT was established by Congress in 1974.

It was originally established for a small band of 7 horses. According to a current permittee, the originally protected horses all died off many years ago when a severe winter caused the breeding animals to starve or die of exposure. It is believed that the horses now in the territory are due to either horses migrating from the adjoining reservation or strays that have become accustomed to living at large. However, there is no official documentation or tracking to establish the connection between the original protected band and the current horse population so it is assumed the current horse population should benefit from the protections. The Act defines wild free-roaming horses and burros as “all unbranded horses and burros on public lands of the United States”. “Wild horse” is a legal status provided to unmarked and unclaimed horses and their progeny that were considered wild and free roaming on public lands at the time of passage of the Act. The management proposal includes consideration of all horses currently within a territory buffer zone based on the aerial data collected by ASNF.

In 2014 -2017 data collection and survey work was conducted by the Apache Sitgreaves National Forests. That data indicated that 14-36 horses were using the HWHT and 200-300 horses were using surrounding FS lands in a five mile radius to the south, southwest and west of the Territory. This means that only 12% of the wild horses were spotted within the Territory. This is believed to be due to

livestock fencing that excludes the horses from the allotments within the Territory. During a field visit to the Territory by the Working Group in September 2017, the forage was observed as healthy and abundant. It should also be noted that cattle are rotated seasonally into the allotments and removed at other times of the year, because forage in the HWHT is considered seasonal. Questions were raised as to the seasonal forage sustainability for the horses within the territory and that could be driving migratory behaviors outside the territory. The draft Appropriate Management Level (AML), determined by a US Forest Service Enterprise Team, set levels at 21-45 horses for the Territory. USFS also indicated that water was not considered a limiting factor for the area, although the 2018 drought proved how quickly this can change.

It is important to account for and properly manage horse herd migration patterns and forage impacts of horses that transverse the wild horse territory or would transverse the territory, given adequate opportunity. Others brought forward the roaming patterns of bands are fairly established and with each band having a 'home range;' they will disperse out of their home range area only when conditions create the need, but are otherwise consistent in their habits. The typical migration pattern of a herd during the year could be used to determine which animals are utilizing resources and land associated with the territory as part of their 'home range' to determine connectivity to the territory of managed animals. However, because the horses have not been able to use the territory due to livestock fencing it would not be appropriate to assume the current HWHT use and migration by the horses reflects accurate horse use of the Territory. The group feels it is important to account for all horses using the Territory Monitoring Zone (see below) until access and use patterns by horses given access to the Territory can be established. The group does feel the AML should be raised to a level that better represents what the territory can sustain. The Territory Monitoring Zone concept should be included to keep the herd numbers genetically viable and better represent the horses that would have used the territory if given the opportunity.

Recommendations:

- a) Account for herd migration patterns both within and outside of the HWHT by applying the same management plan principles to horses within the Territory Monitoring Zone (TMZ) (P)
- b) Horses under a management plan should be defined as horses that at any time during their life cycle traverse, reside or remain within the TMZ of the existing boundaries of the territory and fit the definition of the Wild Horse and Burro Act of 1971.
- c) Permeability measures to provide horses more access to the territory should be managed in collaboration with permittees to achieve balanced use.
- d) Adjustments should be made to give horses year-round access to the entire HWHT
- e) AML levels should be increased to allow for more usage and higher numbers of horses (minimum of 150 horses) in the territory to account for genetic diversity needs. Current genetic research should drive most recent information on number of horses. (P)
 - 1) There was not complete agreement on the minimum of 150 horses. While the majority of the HWHT task group advocated for a higher number than what the original AML suggested, the exact number was not agreed upon.

- 2) Based upon research from Dr. Gus Cothran⁶⁷⁸, many felt that a minimum of 150 was a good number to start with in order to account for genetic diversity. Others felt that a minimum of 150 may not be viable for the territory size and recommended the adjusted AML as a starting point for horse population numbers then let resource conditions dictate up or down based on trend. Lastly, there was also some thought that genetic material would likely be added to the herd as horses continue to cross over from the FAIR, therefore genetic diversity was not a major issue at this time.

General recommendations:

- a) The HPMTG recommends the USFS utilize a partnership approach (private, public, tribal, etc.) to sustain the long-term and dedicated funding for wild horse management within the HWHT.
- b) Funding resources should be prioritized to set up temporary holding facilities for any activities that require gathering of horses, which will be required for any of the recommendations. All holding facilities should be reviewed for safety standards by wild horse gathering experts for safety, soundness, and humane conditions.

Data Collection for Adaptive Management

The HPMTG is in full alignment that there needs to be a system for collection and evaluation of monitoring data for the purpose of determining an updated Appropriate Management Level for the Heber Wild Horse Territory. This is seen as necessary for the health of the forest, supporting the multi-use objective required, and to maintain a healthy horse herd. The evaluation should be conducted using all available data including climatic, upland and riparian habitat conditions, utilization, migration habits, and stream bank alteration.

The Horse Population Management Task Group also agreed that obtaining more scientific data regarding the herd size, gender ratio, age ratio and migratory patterns is important. One of the least understood part of the Heber horses is their movement and roaming patterns. In order to establish a roaming capacity, it is imperative to track the horse movements. In order to establish appropriate management actions, it is important to establish better population counts.

Recommendations:

- a) The HPMTG recommends the development of a herd/band book to accurately inventory and monitor herd roaming patterns and numbers. Potential methods could include:
 - 1) Wild Horse Identification Management Systems following BLM model where possible

⁶ Ovchinnikov IV, Dahms T, Herauf B, McCann B, Juras R, Castaneda C, et al. (2018) Genetic diversity and origin of the feral horses in Theodore Roosevelt National Park. PLoS ONE 13 (8): e0200795.

⁷ Conant. E. K., Juras, R. and Cothran, E.G. 2011. A microsatellite analysis of five Colonial Spanish horse populations of the southeastern United States. Animal Genetics. Stichting international Foundation for Animal Genetics. Vol. 43. Issue 1. Pg 53-62.

⁸ Cothran, E. G. and Slinger, F. 2000. Analysis of genetic variation in the Pryor mountain wild horse herd. In Singer and Schoenecker Manager' summary-Ecological studies of the Pryor Mountain Wild Horse Range, 1992-1997. U.S. Geological Survey, Midcontinent Ecological Center, Fort Collins, CO. 131 pp.

- 2) Leveraging citizen herd book to supplement data
 - 3) Overflight surveys (ideally 2x/year)
 - 4) Collaring
 - 5) Trail cameras at water resources
 - 6) Some mechanism of effective marking such as chipping and/or freeze brands
- b) Before any measures are considered to control horse numbers, the number of horses needs to be determined so there are accurate population counts of horses on the territory and the agreed upon TMZ.
 - c) Both mortality and reproductive rates should be monitored to assist in management decisions.

Collaring

The HPMTG agreed that collaring select horses would be beneficial to understanding movement patterns (especially winter movements which are currently unknown) and aide in making population management decisions.

Recommendations:

- a) It is recommended that a qualified researcher work with the FS to design a collaring study to determine the minimum number of horses required to gain a better understanding of horse home range, movements, etc.
 - 1) Collaring will be done on-site and carefully planned to minimize disruption in herd behavior.
 - 2) Collaring efforts to be a one-time effort (with anticipated data collection of 2-3 years) to establish information, but that collaring be discontinued after the initial information is gathered.
- b) Minimizing the duration that horses are held to collar was noted as important as it is disruptive to the herd, with ideal hold times of 1 day or less.
- c) Collaring mares vs. stallions should be explored to avoid greater collar loss.
- d) The group recommends leveraging partnership with Arizona Game and Fish Department, Bureau of Land Management, Arizona Department of Transportation, Arizona State University, Fort Apache Indian Reservation, and others to ensure that collaring and overflight efforts will be funded and executed.
 - 1) Territory flyovers would provide large herd counts and are recommended ideally 2x/year. In addition to the flyovers, the Task Group recommends an on-the-ground identification system as it will be the more efficient cost-wise.

LIVING CONDITIONS

Defining the scope and limitations of the defined management area, fencing practices, migratory pattern due to changes in weather or forage, etc.

Vegetation/Forage Recommendations:

Vegetative Objectives are as follows:

****Please see the Forage group recommendations****

Water Recommendations:

- a) Maintain existing water improvement projects (annually, or as needed) if applicable.
- b) Perform tank renovations during the dry season (leverage partnerships for maximum work).
- c) Identify areas and tanks most in need of maintenance and implement as funding arises.

- d) In areas within the Territory where water appears to be a limiting factor for yearlong use by wild horses, the possibility of developing season-long water sources should be considered.
- e) Execute emergency response water plans when drought or other conditions call for supplementing water to prevent mass fatalities.

Cover Recommendations:

- a) Ensure that adequate tree cover remains, that is consistent with a mosaic landscape as described in the desired conditions, in the major use areas to provide wild horses with shelter during periods of extreme inclement weather.
- b) Work with stakeholders (wild horse advocates/experts, livestock operators, wildlife biologists, etc.) in the planning and implementation of vegetation treatments within the designated territory.

Living Space Recommendations:

- a) Maintain current living space to facilitate free-roaming behavior. No additional pasture fences will be constructed within the Territory boundary.
 - 1) Gates should be left open as livestock are removed from allotments in the fall and will remain open throughout the winter season to facilitate the movement of animals between seasonal ranges.
 - 2) Where animal concentrations are found along existing fence lines, gates will be widened or added to facilitate movement between areas.
- b) Regularly inspect allotment boundary fences for animal concentrations/sign. Where feasible, gates will be widened or constructed to allow improved distribution of animals throughout the Territory and facilitate seasonal movements.
- c) In areas where FS winter weather road closures don't apply, snow covered cattle guards should be blocked to prevent horse entrapment.
- d) Improve fencing or fencing deviations (for ease of maintenance) where possible along the ASNF boundary along the Fort Apache Indian Reservation to prevent ingress of unmanaged animals from outside the forest.
- e) Work with the White Mountain Apache Tribe to develop a program to return reservation branded horses back into the reservation whenever possible.

Population Management:

The HPMTG has discussed several options for population control/management. The use of a birth control agent, (i.e., Porcine Zona Pellucida or Gonacon), was discussed at length and most members support its use. Removal of horses is a possible population control method but a constant use of this method is not desirable nor recommended. Other options are listed in Table 4.

Recommendations:

- a) Development of a comprehensive population control list of management options.
- b) Management options will be applied using the least intrusive methods preferentially, and citing population thresholds at which movement to the next method would be necessary. The thresholds will be based on horse population studies and forage balance and availability.

A full list of population management techniques discussed can be found in Table 4 below:

Method	Description	Pros	Cons
Immuno-contraception (U)**	Porcine Zona Pellucida - PZP (\$75/horse)	<ul style="list-style-type: none"> • Low impact to herd • Researched and readily available 	<ul style="list-style-type: none"> • Efficacy varies with on-going maintenance • Labor intensive (multiple applications, gathering, etc.) • Time of year limited (re-dart after one month) • Variable formulations • Brand required for re-treatment
	Gonacon (\$60/horse)	<ul style="list-style-type: none"> • One time implementation • 5-year efficacy • One-time costs (dart, instruments, etc.) 	<ul style="list-style-type: none"> • Efficacy varies with on-going maintenance • Labor intensive (multiple applications, gathering, etc.) • May have limited availability • Not permanent
Neutering Stallions (P)	Vasectomize older stallions after breeding has been established	<ul style="list-style-type: none"> • Low impact to herd with one animal per band treated • Low cost • Low complications • Greatest impact on long term population growth • Does not disrupt band behavior • No on-going maintenance 	<ul style="list-style-type: none"> • Have to monitor bands for genetic diversity • Stallions are the most difficult to handle safely • Not full agreement on this as humane treatment (task group and within the public) • Vet skill level varies
Removal (P)	A number of animals are permanently removed from the forest and adopted out or put in private sanctuary locations	<ul style="list-style-type: none"> • Definitively reduces numbers • Good for acute situations that drastically reduce forage like forest fires, drought, etc. 	<ul style="list-style-type: none"> • Finding suitable locations to receive them are limited – adoption, sanctuaries • Expensive to do a gather and removal • Mixed reception/perception by public • Long term costs
Relocation (P)	A number of animals are removed but moved to a different management location or holding location	<ul style="list-style-type: none"> • Horses continue to exist in natural state • Can support genetic diversity goals 	<ul style="list-style-type: none"> • New Management area may cause health problems if too different • Would need bands to stay intact to help with survivability • Expensive • Limited locations/territories for relocation • New horses may be killed by existing horses if in a location where other horses herds exist

** (P) indicates partial agreement on methodology, whereas (U) indicates unanimous agreement

Table 4. Population management techniques considered by the Horse Population Management Task Group; techniques are listed from least invasive (top of table) to most intrusive (bottom of table).

Genetic Diversity

Ensuring health of herd is a component of management thru genetic diversity, distribution of age and gender identification of individual horses will need be done prior to passive genetic information

collection. Once an initial genetic baseline is established, the group supports passive collection. The Horse Population Management Task Group does not support a gather for the sole reason of obtaining genetic information and passive methods or gathering genetic information during collaring efforts are preferred.

Recommendations

- a) Determine a ratio of male to females, age distribution, and determining average body condition score for the herd should be determined through the data collection effort to maintain the health of the herd and the forest.
- b) Maintain the phenotype of animals that currently occur within the WHT. Subsequent to gathers, animals that are turned back out into the WHT will possess the general characteristics found in each home range established in monitoring. Color will not be a consideration when turning out animals.
- c) Maintain genetic diversity in the horse herd using observed heterozygosity. Baseline genetic diversity information needs to be collected within the first years of a published Herd Management Plan. Time may be needed to gather information and understand the herd.

Establishing genetic diversity

More research is needed to know how many animals would need to be sampled in order to establish genetic diversity (i.e., observed heterozygosity). A sampling method design based on herd numbers and other variables needs to be designed.

Recommendations (for obtaining baseline genetic information):

- a) Gathering genetic material (e.g., hair samples) during gathers, collaring, or fertility control efforts.
 - 1) The BLM typically obtains genetic material during gathers and PZP administration. They collect genetic material from a percentage of the herd, in accordance with a sampling design.
- b) Using fresh fecal matter to collect genetic information.
- c) Using hair traps paired with game cameras to identify the horse to collect genetic material.
 - 1) We will need to study the horses to be confident in game camera identification. The herd book can assist in this process.
 - 2) Hair traps would not require managers to gather horses (unless we are sampling horses that have already been gathered).

Shooting and collecting biopsy darts, darts that hit a horse on the thigh or shoulder, remove tissue, and fall to the ground with genetic material.

- a) Darts are typically shot from a distance of 5-45 meters. To allow for a closer shot while not forcing horses into stressful situations, horses could be passively trapped and baited into a large area.
- b) Enclosures could be built in areas herds routinely inhabit so that they are acclimated and not stressed during the darting is not unanimously supported.

Use additional biopsy dart references from the wildebeest literature to supplement the studies done on equine.

Viable populations

The HPMTG agrees that scientifically determined standards for genetic diversity would be reasonable to work with, because they account for the unique factors (i.e., herd size, impact on land associated with different herds). Opinions differ, but the herd should have an effective breeding population.

Transfer of horses

The HPMTG recommends transferring horses between management areas to improve genetic diversity as needed, a practice that is allowed in The Wild Free Roaming Horses and Burros Act. The Act does not permit selecting animals based on their phenotypic traits (e.g., color, size). It is recommended to move more than one horse between herds.

Removal of horses with genetic deformities

The HPMTG concluded that it would be difficult to determine which horses to prioritize for removal from the herd based on physical deformities. Genetic studies are a better way to prioritize whether to remove horses than studying their conformation. Samples collected can be examined by a geneticist in order to prioritize specific genes.

Goals or thresholds for genetic diversity

The HPMTG understands that managers will need to address genetic diversity issues, calculated with respect to the baseline genetic diversity data, once they arise. It is recommended if removal or other management actions are taken, genetic diversity and viability is maintained.

Sources to reference on genetic diversity:

- Devil's Garden Management Plan includes a range of values for healthy genetic diversity.
- The Act recommends an introduction of 1 or 2 breeding animals per generation every 10 years to preserve the genetic resource.
- Rullen RMPPA appendix 12 provides information on determining genetics and measuring variation.

The HPMTG wants to ensure that the removal of a few horses will not disrupt genetic diversity. The BLM places multiple trap sites across a landscape and removes a small portion from multiple groups, about ¼ or the population in each area. The Task Group recommends drawing from best practices and policies to not remove a large number of animals from one area.

Removal Methods and Post-Removal Support

The HPMTG recommends establishing public/private partnerships to assist with best practices where removal and adoption techniques are required.

The contract specifications during any removal effort will require humane treatment and care of the animals during operations. These specifications will be designed to minimize the risk of injury and death during and after capture of the animals. The specifications will be vigorously enforced.

Gathering:

Prior to any gathering operation, the lead agency for the gather will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. Gathering should include one or more veterinarians be present/available to oversee and ensure safety and health of animals in all aspects of operations. The contractor will be appraised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Trap sites and temporary holding sites will be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads whenever possible.

Helicopter gathering:

There was partial agreement on whether helicopter gathering methods should be used as a last resort.

Bait/Water Trapping

This method is preferred by the HPMTG. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses into a temporary trap. Bait/Water Trapping will be used as a method to reduce the populations of wild horses to achieve or maintain AML. All Bait/Water trapping operations will be conducted in accordance with best practices for this type of measure to ensure health and safety of horses.

Traps constructed of portable pipe panels are constructed near animal concentrations and animals lured into the traps through the use of feed or water. Various types of trigger assemblies exist to close the gate on animals that enter the trap, including the use of ropes strung across the trap just above ground level. The animals unintentionally trigger the trap when their legs come into contact with the rope.

Wild horse adoption is recommended as a post-removal measure. There are partnerships available to facilitate the adoptions. The HPMTG notes that public outreach and marketing are vital to a successful adoption program. Freeze brands should be used on gathered horses to assist in horse tracking measures. Looking at horse sanctuaries for horse relocation is also recommended.

Other post-removal actions could include:

- Partnership with guest ranches that would take intact bands to enhance their 'western' elements and allow horses to remain in a safe setting.
- Partnership with wild horse sanctuaries to provide long term private management.
- Partnership with local horse trainers to take gathered horses to train and sell.

Exigent Circumstances

Appropriate protocol for exigent circumstances of horses that are sick, lame, injured or posing a public safety issue.

Recommendations

- a) The HPMTG felt that leveraging the BLM Animal Evaluation and Response protocols with some modification for wilderness temporary holding facilities vs. the holding facilities referred to in the protocol would be the best model to follow. Refer to the appendix for adapted recommendations from the [BLM Animal Evaluation and Response protocols](#)⁹.

⁹ *Euthanasia of Wild Horses and Burros for Reasons Related to Health, Handling, and Acts of Mercy*, Instruction Memorandum No. 2009-41. BLM. Washington D.C., 2009

PARTNERSHIPS AND IMPLEMENTATION

The HWHT Working Group encourages active partnerships and citizen engagement to augment agency capacity in a variety of management actions, including monitoring and evaluation, improvement projects (e.g., fencing, water resources), and targeted support for managing bands and individual horses. Partners can offer significant assistance in mobilizing volunteers, providing much-needed funding, supporting adoption and placement efforts, and providing specific expertise (e.g., on genetics and emergency response).

There are many partners that could assist in the management, monitoring and potential funding of projects and activities within the Heber Wild Horse Territory and its monitoring area. It is recommended that a balanced representation of diverse partners be engaged during implementation.

In terms of monitoring, WG members suggested reviewing examples of BLM monitoring programs in several key sites across the western United States, including the rangeland monitoring work being done by the University of Arizona. Local wild horse advocacy organizations and individuals can assist with tracking horse movements, photo identification of individual animals, and education and outreach to Heber-area residents. For this work to be effective, it will require significant public education efforts by the Forest Service and many partner organizations. For this reason, the WG strongly suggests the ASNFs hire a full-time partnership coordinator to facilitate and oversee this work.

There are several existing examples of collaborative partnership efforts that could be used as a model for learning, including:

- Habitat Partnership Committee (HPC), which provides long-term funding to sustain projects.
- Forage Resource Study Group (FRSG)/Diablo Trust – has demonstrated the opportunity for ranchers and wildlife advocates to work together to maintain the health of the land; funded partnerships are then developed to address these recommendations.
- Natural Resource Working Group, of the White Mountain Stewardship, has used a collaborative model to engage stakeholders.
- Natural Resource Conservation Districts can provide funding to individual producers, on any land type (private, state, FS), e.g., enhancing water sources for cattle and for horses.
- The Verde Front – has implemented a shared leadership model, in which several organizations put in time, effort, and funding.
- BLM in Kingman and HSUS partnership (PZP) and BLM in Phoenix with USGS (collaring) – Paul Griffin is the Research Coordinator
- Gila County Cooperative Extension’s “Reading the Range” program – an award-winning program that has been implemented on the Tonto National Forest with permittees

Strategies for implementation:

The Working Group discussed potential strategies for engaging partnership organizations in supporting implementation of the management plan:

- Facilitated process: bring all (non-agreeing and agreeing) stakeholders together on a regular, sustained basis, particularly those partners who are interested in collaborative action and work on the ground. There is value in learning from local or regional examples of sustained

collaboration such as the Natural Resources Group of the White Mountains, the Salt River WHMG, or other examples.

- Collaborative monitoring group: supported and guided by ASNFs, and involving partner organizations, volunteers and citizen scientists
 - The Band Book is a great way start that the public can partake in, their photos are online and there is personal attachment to that
 - An online Horse Tracking application could be developed with the help of scientists and graduate students
- Sustained funding: Engagement of a range of potential partners and organizations who may be interested in getting involved and supporting this effort after the WG has submitted its report

The WG also discussed more effective approaches for working with the White Mountain Apache Tribe (WMAT), and brainstormed ways to best engage the tribe on issues of common interest, including the boundary fence, restoration efforts, movements of horses onto the reservation (information through the collaring effort-may need an intergovernmental agreement)¹⁰ and preservation of sacred sites. More active engagement can benefit the WMAT economically and enable them to become an integral part of the solution. WG members recommended contact with the Grasshopper Association (similar to a livestock association), which is associated with the Sitgreaves National Forest, as well as District 5 Navajo County Supervisors

¹⁰ AZ Game and Fish Department will investigate the agreement between the tribe and AGFD re: collared elk moving on and off the reservation.

ADAPTIVE MANAGEMENT AND MONITORING PROTOCOLS

A separate Task Group focused on outlining protocols for adaptive management and monitoring. Their recommendations, organized by primary resource management objective, are summarized in the Table 5.

Resource	Objective	Indicator	Monitoring methodology	Monitoring Frequency (Short and Long Term)	Trigger/Threshold	Possible Management Reponses	Notes/Comments
Ecosystem Health Objectives	Maintain or improve ecological conditions in the uplands on the HWHT and the associated Monitoring Zone (as evidenced by stable or positive trend)	Soil stability through ground cover, and spp. Canopy cover	ground cover (rock, herbaceous plants, litter, etc.) and species canopy cover ** add techniques (cameras and vegetation analysis) that indicate level of use by present herbivores (cattle, elk, horse)** utilization	Baseline: every year for 3 years, then every 2-3 years **resume more frequent monitoring if there has been a significant disturbance (e.g. fire)	Negative trend for 3 consecutive measurement periods or 3 out of 5 measurement periods and HWHT horse population exceeds the determined Appropriate Management Level.	Use best management practices to alleviate undesirable conditions/decline in soil stability trend (e.g. livestock: change in season of use, livestock: change in distribution, consider techniques for change horse distribution/pattern changes, increase by % for elk permits)	Objective to be consistent with healthy horse populations (see below) and within AML**
		Herbaceous species composition	refer to Forest Plan for desired conditions based on vegetation type/zones **should focus on vegetation functional groups (warm season/cool season plants)** needs to be tied	Species composition: consider every year for 5 years, then every 3-5 years.	Negative trend for 3 consecutive measurement periods or 3 out of 5 measurement periods.	Use best management practices to alleviate undesirable conditions/undesirable shift in species composition trend (e.g. livestock: change in season of use, livestock: change in distribution, consider techniques for change horse	

			to precipitation and utilization measurements			distribution/pattern changes, increase by % for elk permits)	
--	--	--	---	--	--	--	--

Resource	Objective	Indicator	Monitoring methodology	Monitoring Frequency (Short and Long Term)	Trigger/Threshold	Possible Management Reponses	Notes/Comments
Ecosystem Health Objectives	Maintain or improve ecological conditions in the uplands on the HWHT and the associated Monitoring Zone (as evidenced by stable or positive trend)	Utilization on herbaceous and woody browse plants.	Protocols/methodology from FS guidelines. Consider including methods to identify levels of use by individual herbivore species	Annually and situationally	Exceedance of 35% allowable use over 30% of the key monitoring areas 2 consecutive years or any 2 out of 5 years.	Use best management practices to alleviate undesirable conditions/undesirable shift in species composition trend (e.g. livestock: change in season of use, livestock: change in distribution, consider techniques for change horse distribution/pattern changes, increase by % for elk permits). If allowable use levels exceeded then look at reductions in duration of use or numbers of livestock, horses, or wildlife depending on who it can be attributed to. Increased level of fence and gate monitoring for maintenance needs and prevention of	Objective to be consistent with healthy horse populations (see below) and within AML** Potential for stakeholder/monitoring group to assist with this objective

						ingress. Start development of removal plans.	
--	--	--	--	--	--	---	--

Resource	Objective	Indicator	Monitoring methodology	Monitoring Frequency (Short and Long Term)	Trigger/Threshold	Possible Management Reponses	Notes/Comments
Ecosystem Health Objectives	Maintain or improve ecological conditions in riparian areas and wet meadows on the HWHT and associated Monitoring Zone.	Herbaceous species composition					
		Riparian woody species recruitment and structural diversity, soil compaction?					
	Maintain an open grassland/savannah vegetation type, where appropriate (e.g. areas with appropriate soil type, areas with invaded junipers - needs mapping)	Invading woody vegetation	Soil and vegetation mapping (TES and/or LIDAR - may be available from 4FRI) and stem count	Baseline mapping and treatment mapping	TBD	Juniper removal treatments (mechanical thinning, hand trimming, etc.) both within the Monitoring Zone and within the designated HWHT	
	Maintain open canopy cover in forested areas (Ponderosa Pine type) in the HWHT and associated Monitoring Zone –						Utilize existing, stakeholder agreed upon language (e.g., 4FRI) for Ponderosa Pine

Resource	Objective	Indicator	Monitoring methodology	Monitoring Frequency (Short and Long Term)	Trigger/Threshold	Possible Management Reponses	Notes/Comments
Horse Population Number and Health	Maintain Horse Population within AML and ecosystem health parameters	Number of adult horses and foals.	Flight surveys, herd/band book, collaring, iNaturalist, citizen science	Flights: twice annually Every 2-5 years on population numbers.	Population is approaching the upper quartile and downward trend in ecological condition	Increased use of PZP or use of other birth control agents; vasectomizing stallions, removal (through passively constantly removing horses, or larger gathers)	
	Maintain healthy horse population within HWHT and associated Monitoring Zone	Genetically viable population (is this an objective, or an indicator of a healthy horse herd?)	Initial genetic sample to determine a baseline then every 5-10 years (Genetic diversity: fresh fecal matter, hair samples, biopsy darts.) to monitor diversity.	Long-term, during a large scale gather	Observations of homozygosity (they're all starting to look the same).	Transfer horses from other management areas to maintain or improve genetic diversity. **See Devil's Garden for other practices on maintaining genetic diversity**	
		Henneke body condition scores (combined with drought analysis)	Ocular observation (random individual observation for a herd/band overall score)	continuous	Individual: poor score Herd/band: poor score	Investigate possible causes for poor scores: disease, poisonous plants, resource conditions/drought. Management action could be total removal	

Resource	Objective	Indicator	Monitoring methodology	Monitoring Frequency (Short and Long Term)	Trigger/Threshold	Possible Management Responses	Notes/Comments
Horse Population Number and Health	Maintain healthy horse population within HWHT and associated Monitoring Zone	Drought: Standardized Precipitation Index or its successor. Gender and age ratio		Periodically for drought and body condition scores and gender/age ratios.	SPI values of negative 1 or less for the preceding 12 months. Downward body condition scores approaching 4.	Develop emergency management plan and implement during emergency situations or remove horses for health reasons.	Body condition can vary throughout the year, herd vs. individual scale.
Horse Movements, Connectivity, and Distribution	Heber horses are disbursed and/or able to access across the HWHT....	Occupancy or signs of horse use, trailing, excrement piles. Partnership/Citizen herd book/Citizen science. GPS collars		Periodically (GPS Short Term Initial Info gathering only)	Concentration areas or areas with little to no observations of herd use.	Improved water distribution and dependability. Increase permeability of fencing or gates where have visible sign of horse concentration/trailing. Open gates when livestock are not in a pasture or the adjoining pasture.	
	Enhance horse distribution across the territory	Occupancy or signs of horse use, trailing, excrement piles.		Flights and on the ground work Periodically	No sign of occupancy or maybe no observations during aerial population surveys? Citizen science - anyone report where they observed horses and what they observed.	Improved water distribution and dependability. Increase permeability of fencing or gates where have visible sign of horse concentration/trailing. Open gates when livestock are not in a pasture or the adjoining pasture.	Create Acceptable Locations for improvements with details and requirements for implementation. E.g., Rain / runoff water harvesting concrete tanks with sediment filters for build-up prevention and

Resource	Objective	Indicator	Monitoring methodology	Monitoring Frequency (Short and Long Term)	Trigger/Threshold	Possible Management Responses	Notes/Comments
Trespass Horses	Ingress of horses outside the designated territory is limited as much as possible	Horses that do not appear in the herd book or other forms of data collected through citizen science; or horses that are branded.		Periodically and ongoing	Presence of trespass horse (i.e., branded, haltered, not seen previously).....	<p>If the animal is identified as having ownership (e.g. marked, branded, or easily identified as a domestic horse) contact the ADA brand inspector so they can return them to their owner or take them to the sale barn or other facility.</p> <p>Work with the White Mountain Apache Tribe and develop a program to return reservation branded horses back to the FAIR whenever possible.</p>	<p>that conserve water.</p> <p>Removal processes will be consistent with appropriate agency regulations</p>

Resource	Objective	Indicator	Monitoring methodology	Monitoring Frequency (Short and Long Term)	Trigger/Threshold	Possible Management Reponses	Notes/Comments
Gathers: Health and welfare of horses during removal	Ensure the horses health and welfare during any handling (gathers, contraception, etc.)	Animal health and welfare	Monitoring will begin immediately prior to the start of gatherings and/or removals. Observational checks during transport every 2 hours. Monitoring will again begin immediately prior to the start of any release until care has been officially transferred to the facility whereas the horses were released to.	During all gathers and removals.	No unethical or inhumane treatment or activity will be tolerated at anytime.	One or more veterinarians or trained Large Animal Rescue operators will be present to oversee and ensure safety and health of animals in all aspects of operations. Objective 3rd party witness will also be included who is not directly a member of involved agencies that is adequately informed of undesirable behavior that would be considered abusive. The contracted gatherer will be appraised of all conditions and instructions to ensure their health and welfare is protected. Locate trap sites and holding facilities to reduce likelihood or injury and stress.	

Table 5. Adaptive management and monitoring matrix.

NEXT STEPS

The Working Group held its final meeting on October 15, 2018. During that meeting, the WG reviewed a final draft of this report, and discussed next steps for finalizing the report and recommendations, and sharing them with the Forest Service and Cooperating Agencies. It is anticipated that the Forest Service, as the responsible, decision-making authority, will consider these recommendations as it develops the Proposed Action and initiates the NEPA process in developing a full-fledged management plan.

While there are no immediate follow-up actions planned for the Working Group at this time, members have indicated interest in participating in NEPA-related scoping meetings, and they have certainly been encouraged to stay engaged as the planning process enters this more formal and proscribed process.

At the same time, the WG will be watching as a similar effort with the Salt River Horse Herd takes shape on the Tonto National Forest. The Salt River Horse Collaborative, though separate and distinct, may yield recommendations and guidance that could have additional implications for ongoing planning efforts on the Apache-Sitgreaves National Forests.

Appendix 1: Collaborative Process Concept - Heber Wild Horse Territory Management Plan Development (Approved by the Working Group, August 4, 2017)

1) Need for Developing a Management Plan for the Heber Wild Horse Territory

The Heber Wild Horse Territory (HWHT) is approximately 19,700 acres located on the Black Mesa Ranger District on the Sitgreaves portion of the Apache-Sitgreaves National Forests. With passage of the Wild Free-Roaming Horses and Burros Act of 1971, as amended (the Act), came a mandate to establish territories for the use and protection of wild horses. The HWHT was established in compliance with the law and its subsequent implementing regulations. Regulations at 36 C.F.R. 222.61 direct the Forest Service to develop and implement a management plan for each territory. In addition, in 2007, the Forest Service entered into a Stipulation Agreement (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd487549.pdf) whereby the agency agreed to refrain from gathering and removing horses from the territory until a territory management plan had been completed.

2) Overall scope

- The purpose and scope of this initiative is the development of a written Heber Wild Horse Territory Management Plan.
- The Forest Service will work within the scope of required plan components as directed in the Wild Free-Roaming Horses and Burros Act of 1971 ([text of Act available at http://www.blm.gov/style/medialib/blm/wo/Planning_and_Renewable_Resources/wild_horses_and_burros/sale_authority.Par.69801.File.dat/whbact_1971.pdf](http://www.blm.gov/style/medialib/blm/wo/Planning_and_Renewable_Resources/wild_horses_and_burros/sale_authority.Par.69801.File.dat/whbact_1971.pdf)), as amended; the Multiple Use Sustained Yield Act; the National Forest Management Act; Forest Service regulations at 36 C.F.R. Part 222, Subpart D; the Land Management Plan for the Apache-Sitgreaves National Forests (https://fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3851851.pdf), and other guiding laws and regulations.

3) Goals/Expected Outcomes of the Collaborative Process

- Provide input into the development of the proposed action (to be analyzed under the National Environmental Policy Act [NEPA]) for the HWHT Management Plan and include a monitoring approach including measureable indicators and protocols for incorporating information into an adaptive management framework
- Provide a platform for learning, analysis, and discussion that strives for solution-oriented contributions to the HWHT Planning process.
- Encourage collaboration (but not necessarily consensus) in development of contributions to the HWHT planning process
- Once the HWHT plan is completed, the working group will have opportunities to discuss broader issues, such as horses outside the territory across the greater Forest landscape.

d) Collaborative Approach

Getting organized and initial process design – Apache-Sitgreaves National Forests, Cooperating Agencies, Convener(s) and Facilitator

- Establish facilitation team
- Identify/select appropriate Convener(s)
- Draft and reach agreement on an overall process design
- Regular monitoring, evaluation, and adaptation of the process
- Gather relevant data, procedural information, and other sources to help inform and frame the process
- Establish a website and provide appropriate access to relevant materials

Initial assessment

- Identify interested parties and appropriate representatives reflective of a range of perspectives related to the issues to be addressed during the planning process
- Gather preliminary information and insight that can inform the process design and effective functioning of the working group

Communication and access to information

- A dedicated working group website will provide access to necessary documents and information about the project
- Facilitation team will promote regular and effective communication among participants
- Regular updates will be provided to the general public and to the media, as agreed upon by working group participants

e) Decision rules

Quorum requirement

- There is no quorum requirement.
- The participants present and active at a given meeting have the authority and permission to continue to work and reach conclusions and recommendations on behalf of the group.
- Those who are not present will make an attempt to provide their input (via documented meeting notes or other electronic forums) before a given meeting.

Decision-making

- The working group is consultative, and has no decision authority.
- As far as possible, conclusions and recommendations will strive to achieve consensus, which is defined as the willingness of group participants to support a particular outcome, even if the outcome is not wholly satisfactory.
- If consensus cannot be reached, areas of agreement and disagreement on recommendations will be documented for the record, and for further consideration by the decision-making authority.

f) Roles and Responsibilities

Convener:

- A neutral/independent party that provides a setting for the deliberations of the working group
- Assists in basic logistics, organizing, and hosting of working group meetings and activities
- Works closely with the facilitation team to:
 - Identify and assemble a representative group of participants
 - Provide appropriate support for meetings and activities
 - Encourage the working group works in a timely fashion, meets its milestones, and achieves its overall goals
- Works with Facilitation team and working group members to provide regular updates to the public

Facilitation team:

- A third party that provides facilitation support for working group deliberations
- Works under a contractual agreement with the Forest Service, but will strive for effective collaboration and balanced representation of affected interests involved in the process
- Develops an overall timeline and series of activities for the process
- Organizes and schedules meetings and activities
- Provides a website and necessary materials to support effective communication and discussions
- Facilitates regular communication among working group participants and participating agency representatives
- Fosters engagement of a broad range of participants and perspectives
- Reaches agreement on group working agreements and protocols; strives to ensure these are adhered to by participants
- Provides facilitation, as needed, for group discussions including working group, sub-groups and public meetings
- Provides documentation of group discussions and outcomes
- Works with the FS to develop a report to describe process and outcomes

Forest Service:

- The Lead Agency, and is the decision-making authority on the final content of the HWHT Management Plan
- Participants to the working group will include Forest Service staff with appropriate subject matter specialization, line officers, and deciding officials
- Develops NEPA-related documents, including the Proposed Action and potential Alternatives
- Prepares for and participates actively in working group meetings and activities
- As much as feasible, incorporates input from the working group into NEPA-related documents
- Provides necessary background information, technical input, general guidance, and establishes clear sideboards to working group deliberations
- Responds to public comments

Cooperating Agencies:

- Follow procedures for Cooperating Agencies as outlined in 40 CFR 1501.6 (<https://www.gpo.gov/fdsys/granule/CFR-2005-title40-vol31/CFR-2005-title40-vol31-sec1501-6>)
 - Participate in the NEPA process at the earliest possible time
 - Participate in the scoping process
 - Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability
- Prepare for and participate actively in working group meetings and activities
- Provide technical input as appropriate to their agency expertise and mandate
- Retain authority for their respective roles in the process and any projected outcomes

Working Group participants:

- A range of participants could include: interested citizens, representatives of non-governmental organizations, academics, scientists, advocates, participating agency representatives
- Provide technical input as appropriate to their individual or organizational expertise
- Work collaboratively to achieve the overall goals of the effort
- Work within project sideboards set by the Forest Service and Cooperating Agencies
- Adhere to working agreements and process protocols established for the process
- Consistently prepare for and participate actively in meetings and activities
- Assist in obtaining necessary information to achieve working group goals
- Provide timely comments and feedback on planning documents
- Work toward providing potential solutions to issues raised during the planning process
- Respect and follow the working agreements
- The following criteria will be utilized to identify working group participants (Note: Individual participants may not meet every criterion, but each of these factors should be considered):
 - Demonstrated knowledge, experience, and interest in the subject
 - Affected by, or have an understanding about, the effects of the outcomes
 - Brings a valuable and informed perspective
 - Participates collaboratively and constructively
 - Willing to think creatively about a range of solutions
 - Contributes useful information to the process
 - Networks effectively with people or groups with similar interests
 - Electronically accessible and capable of accessing relevant information from the internet
 - Available and willing to commit time and energy to the process

g) Working Group Standards of Conduct

In the spirit of progress and cooperation the working group participants commit to the following standards:

- Personal Conduct
 - Treat one another with civility, both within and outside the meeting environment
 - Respect each other's perspectives and other points of view
 - Refrain from personal attacks on any participants, conveners, agency representatives, facilitators
 - Be honest in communications among and about one another
- Participation
 - Prepare for and participate actively in meetings and activities
 - Maintain group accountability to the goals, protocols, and standards of conduct
 - Focus on the future rather than belaboring issues of the past. Recognize and learn from the past, acknowledge the present, and visualize where we want to be in the future
 - Focus on practical solutions and implementable outcomes

Appendix 2: Heber Wild Horse Territory – Synthesis of Key Themes from Stakeholder Interviews (Prepared by Southwest Decision Resources, July 27, 2017)

“Heber horse management is the modern resource challenge that we face – there are ecological issues, animal welfare, policy, and needed public support – it has everything that defines current natural resource management nowadays”

The Apache Sitgreaves National Forests (ASNFs) have been tasked with the development of a Management Plan for the Heber Wild Horse Territory, in compliance with the Wild Free-Roaming Horses and Burro Act of 1971. The ASNFs and cooperating agencies have elected to utilize a collaborative approach to obtain input and recommendations in development of the Plan, and Arizona State University’s School of Sustainability (ASU) has committed to convening a collaborative Working Group.

Working in cooperation with Southwest Decision Resources (SDR), ASU and SDR staff conducted 28 interviews between April and July 2017. Interviewees included stakeholders and resource persons most familiar with wild horse management issues, particularly in the Heber Wild Horse Territory. Many of the individuals selected for interviews were also considered as possible candidates for the working group.

This report is a brief synthesis of key themes and major insights gained from these interviews. Comments are organized in the following categories:

6. History of involvement in horse management (local, regional, national levels)
7. Areas of agreement
8. Issues and challenges – Key themes
9. Information needed
10. Views of successful management

History of involvement in Horse Management

Demographics and familiarity with the area/ issues

- Respondents represented individuals familiar with horses and horse management at federal and state levels, national to local horse advocacy groups, ranching perspectives (local and regional), academia/range expertise, local business owners, veterinarians, wildlife biologists, sportsmen’s representatives, horse rescues, equestrians, and local citizens.
- History with/knowledge of the area included:
 - Multigenerational residents with detailed accounts of horses dating back to the 1960’s.

- Those who have lived in the area for a long time (10-20 years) and are familiar with national and local horse management issues.
- Those who have worked and lived in the area for a long time (10-20 years) but not directly involved with horses (just knew they were on the landscape).
- Those who moved there within the last few years (5-10) and enjoy horseback riding, photographing/documenting the horses, camping, hunting and exploring the area.
- People unfamiliar with, and not living in the local area, but familiar with horse issues at national and local levels.
- Academics, researchers and people with subject matter expertise (horses, range management, wildlife management, etc.).
- Many respondents were familiar with the location and attributes of the Heber Wild Horse Territory. Others have never visited and are unsure of its location; however, their experience in other territories was viewed as important.
- Many people became familiar with, interested in, and/or concerned about the Heber horses after the Rodeo-Chediski Fire.
 - Some believe there has been an increase in horse numbers since the fire due to crossing over downed fences (primarily from the White Mountain Apache Reservation), improved forage in burned areas, owners setting them free, and the lack of natural predators.
 - Others noted that horse numbers appear to be stabilizing due to natural factors such as predation (lions, wolves).

Areas of Agreement

- Most agreed that horses are inherently likable animals; there was broad agreement that they should be treated humanely.
- Most agreed that some form of horse management needs to occur on the landscape.
- Most respondents agreed that a healthy and aesthetically attractive landscape (including riparian areas, native waters, wildlife and habitat) is very important.
- Many underscored the need for accurate and reliable data (on horse numbers, range conditions, utilization), and that decision making should be based on solid, credible information.

Issues and Challenges – Key Themes

Horse Population and Origin

Population number

- There was little agreement on how many horses are currently on the landscape, and little agreement on the appropriate methods to count and monitor herd size.
 - Interviewees stated existing herd numbers may range from several hundred to several thousand.
- Most agreed that deciding on “the number” or “range of numbers” would be a difficult but crucial task.

- Recommended horse populations numbers for the Territory ranged from 8 to around 150/200.
 - Reasons behind suggested range of numbers included limited Territory size, impacts to wildlife and resources, horse reproductive rates, and maintaining genetic viability.
- Some thought the number of horses currently on the landscape exceeds natural resource capacity, while others felt that there are ample resources for current horse numbers.
- Some suggested that in order to determine a sustainable horse population size, forage abundance and availability would need to be inventoried, using standard range management assessment methods.
- Most respondents agreed that some form of management is necessary, and that it is important to establish a viable population for the Territory.
 - However, ideas on effective management varied considerably, and included actively reducing the number of horses, managing existing numbers, and/or letting the horse herd grow by improving available resources.
- Many respondents did not know the extent, location, and intensity of current horse use within the existing Territory; those who did have familiarity with the Territory generally felt that the Territory was relatively small in terms of sustaining the current horse herd.
 - Many commented on the challenge of reaching an agreed upon number of current horse population in the area, as well as the overall number of horses associated with the Territory.

Origin (genetics)

- There was general disagreement on whether the horses are “wild/native or feral/non-native”
 - Those that refer to them as “feral/non-native”, think most horses came from a surge in population after the Rodeo Chediski Fire. They support active management such as round ups, humane euthanasia, fertility management, and moving horses to holding facilities.
 - Those that refer to the horses as “wild” or “native” think that the horses are part of the natural landscape/ecosystem and possibly descendants of the original Spanish herd, based on visual similarities.
- Many agreed that word distinctions and horse origin matter when it comes to future management.
 - Without this distinction, horses are “in limbo”, which makes management decision making more difficult

Ungulate Management on the Landscape - Horses/Wildlife/Cattle

Range conditions (available resources and conflicts over use)

- Most respondents noted the conflict between horse advocates and the ranching community; these discussions are long-standing, often heated and emotional.

- There is a perception that ranchers don't want any horses on the landscape, however some from the ranching community stated a willingness to manage horses.
- Another common misperception is that horse advocates do not want horses managed or controlled in any way. Several interviewees expressed a willingness to discuss effective management and control.
- Some statements reflected ongoing disagreements among stakeholders, e.g.,:
 - Overgrazing from horses impacts cattle forage abundance, availability, utilization, and overall grazing capacity over time.
 - Horses are dominant at resources such as water (chasing off cattle and wildlife), which are often managed by permittees.
 - There is a lack of equity for animals managed under multiple use:
 - Cattle have a legal allocation of forage, and permitted grazing allotments, whereas horses do not, as described by the Wild Horse and Burro Act.
 - Lack of fairness that cattle use is monitored and management responds to monitoring data (pasture rotation, changing stocking rates, etc.).
 - Frustration that horse impacts are not measured and there are not changes in horse management in a response to impacts.
- Some suggested a revision of permitted grazing, to include allotments (and forage allocation) for both horses and cattle.
- Some felt that due to native species diversity and important riparian areas, grazing was not a suitable land management practice on the landscape.
- There was some indication of distrust in agency determination of range condition and forage availability.
- Some respondents were concerned about direct competition between native wildlife species (deer, pronghorn and elk) with horses, while others felt strongly that under multiple use management, horses are an important part of the ecosystem and therefore should be allocated forage.

Habitat Impacts

- Most agreed that current habitat conditions are supporting healthy animals (horses, deer, elk, etc.). However, many stated that this is a delicate balance because conditions can change quickly on the landscape, due to factors such as annual precipitation or fire.
- Some respondents were frustrated that money is allocated for habitat improvement for managed species (wildlife and cattle), however "non-permitted" animals are also benefitting.
- Few respondents stated that climate change is not agreed upon or being addressed, which could have impacts on habitat and range conditions over time.
- Many interviewees indicated that forage availability and habitat impacts are the main challenges to managing horses in the HWHT.
 - Many noted the challenge of determining adequate forage for all ungulates (cattle, horses, elk and deer).

- Many expressed concern that there is no winter range/forage within the existing Territory, and this requires horses to move across the landscape.
- Some stated that it would be challenging to determine range condition (including forage availability, use, distribution, and resource impacts) for horses, in a similar way as with cattle, for areas of use by horses.
- Some respondents acknowledged the direct impact of horses on habitat (primarily due to overgrazing and hoof compaction).
 - Riparian areas were noted as the most heavily impacted.
 - Secondary impacts noted from overgrazing included impacts to Mexican spotted owl and northern goshawk prey base due to reduction in understory vegetation.
- Others have not seen damage on the landscape due to horses, and/or cannot equivocally demonstrate that habitat impacts are due to horses.
- Among respondents who expressed the view that habitat was being damaged, there was no agreement as to the level of impact – some thought that range conditions generally looked good, while others cited impacts across the landscape.

Trust and Transparency

- Many respondents indicated that trust and transparency were challenging aspects of managing horses in the Territory, primarily surrounding these topics:
 - The humane treatment of horses
 - Relationships between horse advocates, ranchers and Forest Service personnel
 - Trust within and between interest groups
 - Forest Service staff turnover
- Many interviewees stated that the human aspects will be challenging in determining successful management of the horse Territory, e.g.,:
 - Non-science based advocacy/heightened emotions
 - Lack of common sense
 - Inability to compromise, collaborate, get along, find areas of agreement
 - Lack of understanding about the issues
 - Lack of state-wide education about rural lifestyles
- Some respondents indicated that the threat of injunctions and lawsuits, and political pressure, locally and statewide, presents challenges to managing the horse Territory.

Science & Management

Forage study/monitoring/rangeland health – Landscape Science

- Most interviewees said more information about forage resources in the area would be useful, e.g., forage availability, status, vigor, health, use/utilization
- Many respondents mentioned the need for more information on range/habitat conditions including:
 - water resources, livestock allotment numbers, livestock management plans, overall landscape health assessment
- Some mentioned the importance of monitoring, e.g., on the following:

- Bare ground around water sources
- Native plant community/populations
- Habitat integrity
- Forest health and understory health
- Natural water sources status/impacts
- Soil health
- Erosion
- Recreation
- Wildlife (elk and deer) populations
- Logging
- Most agreed that information/analysis needs to be transparent, rigorous and scientifically sound.

Costs and Resources

- Some interviewees expressed concerns about the cost of managing a horse herd on the landscape.
 - Many respondents noted that the Forest Service doesn't have adequate funding to carry out broad birth control efforts.
 - A few respondents noted the challenge of finding funding to maintain horse herd management and infrastructure, such as feeding and salt, fixing fences, and hauling water.
 - A few interviewees mentioned the costs to local communities in terms of lost revenues from cattle ranching, reduced recreation, and reduced timber sales.

Information Needed

Landscape Science - Forage study/monitoring/rangeland health

- Most interviewees underscored the importance of having good information about forage resources and range/habitat conditions in the area, and most agreed that the information/analysis needs to be transparent, rigorous and scientifically sound. (see section 4 above).

Other information needs mentioned by interviewees:

Animal Behavior

- Some respondents indicated the need for more information on wild horses, including:
 - Interactions and competition with native wildlife and cattle
 - Movements across the landscape
 - Dietary preferences and grazing behavior
 - Social structure of bands
 - Management effects on reproduction
 - Effects of birth control on family structure

Wildlife and Sensitive Species

- Some respondents stated that more information on what species are also on the landscape would be helpful, especially special (threatened or endangered) species and game species that are managed in the area.

Genetics

- Some respondents stated that the genetics of the horses on the landscape need to be analyzed for indications of Spanish descent or connections to the White Mountain Apache herd. Determinations of descent are important in maintaining a “wild” status and future management.

Current and ideal herd size

- Many respondents mentioned the need for more concrete information on the existing horse herd population numbers in addition to the need for analysis to provide an ideal herd size number based on landscape resources.
- More information is needed on attrition rate to accompany reproduction studies
 - Some respondents question whether a horse herd can increase 15-20% per year

Birth Control/Vaccinations/diseases

- Many interviewees suggested the need for more research on birth control/sterilization methods. Some respondents also mentioned concern about the long-term effects and effectiveness of birth control (PZP) in addition to the cost and acceptability of its use.

Views of Successful Management

Utilize a Collaborative Approach

- Many respondents stated that successful management will require a collaborative effort, from an engaged team, based on trust.
- Many respondents mentioned that the group should include participants from all affected organizations and agencies (state and federal), and include ranchers and other stakeholders. Other characteristics of the collaborative effort should include:
 - Participants should have good familiarity with the landscape and Territory
 - Open working relationship of all members
 - Flexibility regarding outcomes
 - Addressing all concerns and issues
 - Inclusiveness
 - Commitment to the process and follow through
 - Transparency in recommendations and decision-making
 - Agreement on approach to management/strive for consensus when possible

Define a Population Number

- Many respondents stated that determining a specific number of horses or sustainable carrying capacity was important to successful management.

- Some recommended that the population number should be:
 - Flexible with a level of fluctuation into perpetuity
 - Able to maintain genetic variability
 - Account for habitat and resource impacts
- It was suggested that information on the population should also consider:
 - Wildlife
 - Cattle
 - Genetics
 - Resource needs

Determine Forage, Range/Landscape Health

- Most interviewees stated that there was a need for initial studies and assessments to inform successful management. These studies would include:
 - Forage (quantity and quality)
 - Habitat
 - Landscape
 - Impacts
 - Genetics
- Most respondents described the maintenance of healthy forage, waters, riparian areas, and wildlife populations as important in the management of horse herds.

Define the Territory/Containment

- Some interviewees mentioned that some kind of containment of the horses was needed; some recognized that a Territory fence would be necessary for successful Territory management.
 - Some expressed concern over the border (WMA-ASNFs) fence and recommended clearing damaged trees close to the fence line.
 - Some felt that a Territory fence would minimize impact on habitat and resources across the landscape.
 - A Territory fence was mentioned as a way to account for movements related to summer and winter range.
- Some respondents mentioned that one accomplishment may be determining what area the horse herd will be using and how.
- Some interviewees mentioned considering adjusting Territory boundaries, not increasing, to include better habitat for seasonality.

Utilize Adaptive Management

- Some respondents recommended having an adaptive management plan that takes into consideration climate change, fire, and past experiences.
- Developing a management plan that works to meet expectations of agencies (USFS, AGFD, ADA, etc.) and horse advocacy groups was important to some.
- A few mentioned the implementation of a monitoring program and the use of teams to collect data.

- Many interviewees suggested that the working group be involved in identifying research needs and providing oversight for data gathering and synthesis of findings.
- Some stated that creating a plan that requires revisiting recommendations and decisions is essential for monitoring implementation and keeping the group focused and engaged.

Utilize Active Management

- Many interviewees suggested that successful management is equivalent to active management. This could be comprised of many components, including:
 - Feeding, as there is no winter forage in the Territory,
 - Watering, as it may be limited within the Territory
 - Culling (selectively removing individuals/studs from the herd)
 - Training and selling removed individuals
- Many interviewees mentioned that recommendations for reproduction control and (humane) herd management are important to determine by the working group.
 - Some recognized that reproduction control (sterilization/birth control) would be useful for small to medium herd sizes; additional reproduction related topics include:
 - Humane “pain minimization” sterilization techniques
 - PZP/birth control
 - Once the herd size is stabilized at the appropriate size, it needs to be managed so that birth and death rates are equal
 - Potential partnerships between land management and horse advocacy groups – working and studying herds on the ground
 - Round-ups and adoption, with more investigation into successful strategies
 - Long term pastures and short term corrals for active management and encouraging adoption
- Several interviewees mentioned a potential partnership opportunity for horse advocacy organizations and the Forest Service
 - Funding the implementation of wild horse birth control project
 - Putting dollars toward habitat improvement projects
- Many believed that all horse management should be humane, while some stated that humane management would not involve round-ups or euthanasia.
- Consider social and economic impacts to local communities
 - Some respondents recognized the economic value (i.e., ecotourism) of the horses to local communities
 - Some recommended capitalizing on the economic benefit by considering ecotourism/guided tours to experience the horses on the landscape
 - Consider regionally unique marketing techniques for promoting tourism and adoption

Consider No Management

- Few stated that it would be ideal to have natural predation on the landscape to help with herd management.

- Few mentioned that letting nature take its course (for the increase and decrease of band/herd size) would be considered successful management.

Implications for the Working Group

Focus on positive messages, areas of agreement

- Humane treatment, options for effective management, achieving healthy ecosystems, use of credible science/data in decision making

Trust building will be key

- Clear commitment from FS – in terms of WG goals/parameters, constraints, capacity
- Honest/candid exchanges among WG members
- Disagree respectfully – maintain a civil, honest tone in all discussions
- Work for consensus, but respect and record dissenting views
- A major goal of the WG should be *learning* – about actual field conditions, use of science in decision making, laws and policies, perspectives of other stakeholders
- Regular and effective communication with outsiders

Data and Science – establish solid, credible baseline info

- Population numbers and genetics
- Resource conditions
- Utilization and carrying capacity
- Use periodic field visits to validate assumptions, seek clarity on science, and ground the group in common perceptions
- Based on interviewee comments, WG members will be interested in both the data and the methods.
- Issues of transparency and credibility will be central to information management for the WG.

Perceived management challenges

- Defining animal populations
- Determining carrying capacity and appropriate numbers
- Habitat/wildlife impacts/forage availability
- Funding and staffing resources for management
- General communication

Creating realistic expectations

- Scope of work for the WG
- Ongoing engagement/adaptive management
- Resources and capacity

Appendix 2 – Interview Questions for the Assessment

- 1) Tell me about the history of your involvement in wild horse management, and particularly your involvement in any of the discussions or activities related to the Heber Wild Horse Territory.
- 2) What do you think are the primary issues in managing horses in the HWHT? Which issues do you think are of highest priority – i.e., that need to be addressed first?
- 3) How do you see your involvement in these issues going forward? What role do you see yourself playing?
- 4) What do you think are the main challenges or constraints in managing horses in the HWHT? How could these challenges be addressed?
- 5) In your view, what would successful management of horses in the HWHT look like?
- 6) What points do you think people generally agree on in managing horses in the HWHT? What are the primary points of disagreement?
- 7) What kinds of information, analysis, or research, would help address Heber horse management in the Territory?
- 8) Who else do you see as key resources for this effort? Who/which organization do you see as offering the most in terms of improved solutions or outcomes? Who else would you recommend we contact?
- 9) Are you aware of the Forest Service’s plan to convene a collaborative group to work on these issues?
 - a. What do you think are some realistic things this group could accomplish to help resolve these issues?
 - b. Would you be willing to participate? If so, under what conditions?
 - c. What do you think you could contribute to this process?
 - d. What (if any) would be your concerns about a process like this?
 - e. Are there days/times which are better for your participation?
- 10) Do you have any questions for us, or anything further you would like to discuss?

Appendix 2 – Key resources mentioned

Agencies

- AZGFD, BLM, Wild Horse
- Burro Advisory Committee final publication of recommendations to the Interior Secretary.

Sportsmen/Wildlife advocates

- Arizona Wildlife Federation, Rocky Mountain Elk Foundation, Big Horn Sheep Society,

Ranchers/Range Management

- Permittees
- AZ section of Society for Range Management
- National Society for Range Management
- National Resource Conservation Services
- National Resource Conservation District

Environmental Organizations

- White Mountain Conservation League
- Audubon
- Great Old Broads
- Western Watershed Project
- Center for Biological Diversity

White Mountain Apache

- Tribal Elders
- Tribal Chairmen
- Grasshopper Association

Recreationists/OHV/ATV/Camping

- OHV groups

Local/State Government

- AZ Dept. of Corrections
- Navajo County Animal Control
- Political bodies – town councils
- County Manager

Business Community

- Chamber of Commerce

Horse/Animal Advocates

- Long-standing local wild horse advocates

- Am. Wild Horse Pres. Campaign
- Humane Society

Scientists/Academics

- *Texas Tech Geneticist*
- *Local biologist with history on the R-C fire*

Local/Historical Background

- Those that can provide historical background

Photographers/Artists

Local Residents

Other

- NAU talkshow radio - Heber Horse segment

Appendix 3: List of participants in the Working Group process¹¹

NAME	AFFILIATION/PERSPECTIVE/EXPERTISE
Working Group members	
• Ole Alcumbrac	Veterinarian
• Bryan Cook	Local government
• Soleil Dolce	Equine Rescue
• Ethan Ellsworth	Rancher
• John Hall	BLM – AZ Wild Horse and Burro Lead
• Rodney Porter	Rancher
• Barb Rasmussen	Wild horse advocate
• George Ruyle	Academic
• Bruce Sitko	Citizen - unaffiliated
• Vashti “Tice” Supplee	Wildlife management
• Bob Vahle	Wildlife management
• Walter “Chip” Wilson	Equestrian recreation
USDA Forest Service observers	
• Stephen Best	Apache-Sitgreaves NFs
• David Evans	Apache-Sitgreaves NFs
• Tolani Francisco	USDA Forest Service – Region 3
• Teresa Gallagher	Apache-Sitgreaves NFs
• Wendy Jo Haskins	Apache-Sitgreaves NFs
• Steven Johnson	Apache-Sitgreaves NFs
• Richard Madril	Apache-Sitgreaves NFs
• Nancy Walls	Apache-Sitgreaves NFs
Cooperating Agency observers	
• Bob Birkeland	AZ Game and Fish Department
• Jacqueline Hughes	AZ Department of Agriculture
• Chris McCormack	AZ Department of Agriculture
• Leatta McLaughlin	AZ Department of Agriculture
ASU/SDR convening and facilitation team	
• Julie Murphree	Arizona State University
• Michael Schoon	Arizona State University
• Carrie Eberly	Southwest Decision Resources
• Larry Fisher	Southwest Decision Resources
• Abby Fullem	Southwest Decision Resources
• Andi Rogers	Southwest Decision Resources

¹¹ Note that this list represents only those participants who attended a majority of WG meetings and Task Group discussions. It is not all-inclusive, as some participants attended only a few of the meetings. This list should also not in any way be construed as indicating support for WG recommendations.