

**United States Department of the Interior
Bureau of Land Management**

**Environmental Assessment
for the
Little Book Cliffs Wild Horse Range Management**

Grand Junction Field Office
2815 H Road
Grand Junction, Colorado 81506

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JULY 2024



The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple-use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air; and scenic, scientific, and cultural values.

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1. INTRODUCTION AND BACKGROUND

INTRODUCTION

The Bureau of Land Management (BLM) Grand Junction Field Office (GJFO) has prepared this Environmental Assessment (EA) to disclose and analyze the environmental effects of the Proposed Action and alternatives. The Proposed Action consists of a multi-year gather plan to manage the Little Book Cliffs Wild Horse Range (LBCWHR) within the current Appropriate Management Level (AML) of 90 to 150 animals, administer population control measures, address drought issues, and respond to wildfire when necessary. This would be accomplished through gathers, employing the use of fertility treatments, returning fertility-treated wild horses to the LBCWHR, or removal of excess wild horses from within and outside the Little Book Cliffs Wild Horse Range (Map 1.1-1 displays the LBCWHR and holding areas).

This EA will assist the BLM GJFO in project planning and ensuring compliance with the National Environmental Policy Act (NEPA) and determine if significant effects could result from the analyzed actions. Following the requirements of NEPA (40 CFR §1508.9 (a)), this EA describes the potential impacts of a No Action Alternative, Proposed Action, as well as a third alternative for the proposed Little Book Cliffs Wild Horse Range gathers, across a multi-year period.

During the multi-year period, if new information or circumstances arise or the initial gather achieves population numbers within AML the BLM would utilize the NEPA process to identify the need for additional analyses prior to subsequent gathers. BLM's management to achieve a thriving natural ecological balance (TNEB) is not limited to removing excess animals; it also includes measures to reduce annual population growth and to allow for recovery of degraded vegetation and riparian areas impacted by wild horse overpopulation. These objectives require a sufficient time frame for achievement. Therefore, the BLM would, as soon as possible, promptly gather and remove excess animals to achieve an appropriate management level (AML) between 90 to 150 animals, and include fertility control treatments to slow population growth, and return selected animals back to the LBCWHR. Animals returned to the LBCWHR would be based on the Population Management Plan (Appendix A). In addition, BLM would continue gathers and removals, under this NEPA analysis, when it is determined that excess horses need to be removed to maintain the population within AML. Furthermore, during the multi-year period BLM would continue to conduct bait and water trap gathers to administer fertility control, address distribution issues, and manage for drought and wildfire impacts.

For these reasons, a multi-year gather plan is needed to remove excess wild horses and establish a herd size within AML, implement population growth suppression measures that decrease population growth leading to a lower number of excess animals to be removed from the LBCWHR, in subsequent gathers.

BACKGROUND

Since the passage of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA), Public Law 92-195 (as amended), management knowledge regarding wild horse population levels has increased. For example, it has been determined wild horses can increase their numbers by 15% to 25% annually, resulting in the doubling of wild horse populations about every 4 years (NRC 2013). This has resulted in the BLM shifting program emphasis beyond just establishing AML and

conducting wild horse gathers, to include a variety of management actions that further facilitate the achievement and maintenance of healthy and stable wild horse populations and a “thriving natural ecological balance” (TNEB). Management actions resulting from shifting program emphasis include implementation of population growth suppression measures (fertility control vaccines or flexible intrauterine devices (IUDs)), adjusting sex ratios to approximately even numbers of males and females, and collecting genetic samples to monitor herd-level genetic diversity. This also includes developing multi-year plans which allow for follow-up gathers that may be necessary to implement population management, remove excess horses, and meet management objectives over time, with the overarching goal to reduce annual growth rates, maintain the herd within AML, and ensure healthy wild horses and healthy rangelands in the long term.

The LBCWHR is located approximately 20 miles west of De Beque, Colorado, on top of the Book Cliffs escarpment. It is 13 miles in length and encompasses 36,114 acres of which 35,189 acres are public lands managed by the BLM, 925 are private acres, and 2,386 acres are managed for horses outside the LBCWHR (Map 1.1-1).

Topography is highly variable, ranging from deep, rugged canyons in the lower elevations along with gently sloped mesas dissected by steep canyons in the upper elevations. Coal and Main Canyons are the primary use areas at lower elevations, where Upper Main, Cottonwood, and Lane canyons divide upper elevations. Elevations range from 5,100 feet to 7,100 feet above sea level. The entire wild horse area is enclosed by pole or wire fencing in combination with natural barriers (sheer canyon walls and escarpments).

The LBCWHR was established in the fall of 1974 by a General Management Agreement. The BLM created the agreement to resolve wild horse conflicts associated with the Round Mountain grazing allotment and the permittee. On November 7, 1980, the area was designated as the third National Wild Horse Range in the country. There is no livestock grazing authorized within the LBCWHR. With proximity to the Grand Valley, the LBCWHR receives abundant interest from the public.

The BLM wrote and approved Little Book Cliffs Wild Horse Management Plan in 1979, which was revised in 1984 and 1992. The AML established in the 1979 plan was 65 to 125 wild horses. In 1997, the BLM added part of the Round Mountain Allotment to the horse range through a cooperative agreement with the permittees. This added 4,904 acres and 319 animal unit months to the horse range. In 2002, The Little Book Cliffs Population Management Plan (PMP) was prepared and amended the Wild Horse Management Plan (Appendix A). The PMP adjusted the AML from 65 to 126 in the 1979 plan to 90 to 150 animals in the 2002 plan and described the desired population demographics for the range.

In 2002, the BLM initiated a fertility control research program in coordination with the Biological Research Division (BRD) of the United States Geological Service (USGS), in the Little Book Cliffs Wild Horse Range, to study the effectiveness of porcine zona pellucida (PZP) and the effects it had on wild horse fertility and population growth. Details of the research program are contained in the Environmental Assessment and Gather Plan Document CO-GJFO-32-EA. The research program followed the contemporaneous national fertility control field trial plan.

In 2007, the BLM shifted fertility control activities from the individual-based research study to the population-based research. Field darting under this research program ended in 2006 but the BLM and volunteers continue to keep records of foaling data and administered fertility control. Following 2006, fertility control efforts continued within the LBCWHR through additional NEPA analysis CO-130-2007-010-EA. Fertility control will continue within the LBCWHR regardless of the determination to conduct a gather operation.

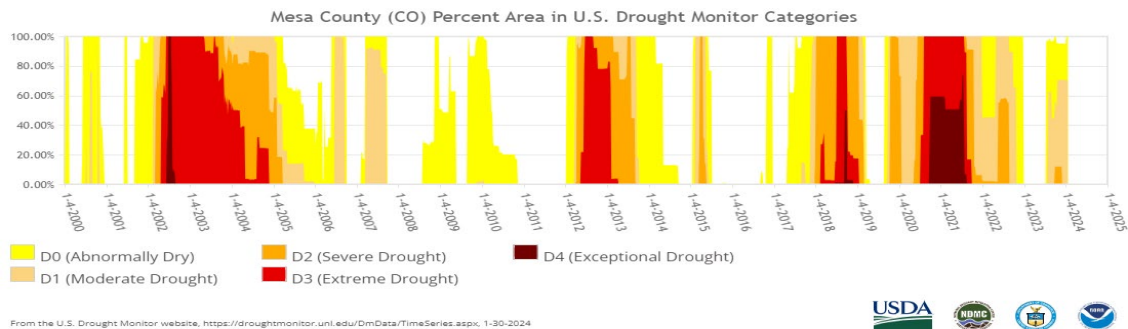
Current records kept by the BLM with assistance of the local volunteer group show a current population as of July 2024 of 222 horses including 29 foals (Table 1). These records are based on year-round ground surveys and have proven to be accurate in the past. Of the 193 adult wild horses, 42% are males and 58% are females. Foaling records for the past several years show a much higher percentage of fillies born compared to colts. Past population numbers and foaling rates are shown in section 3.5.3.

Table 1. Little Book Cliffs Wild Horse Range LBCWHR attributes in 2024.

Herd Management Area	Total Acres Public/Private Land	Appropriate Management Level	Sept 2023 Ground Population Count	Acres Outside LBCWHR (Lane Gulch)
Little Book Cliffs Wild Horse Range	35,189/925	90 to 150	222	2,386

Drought conditions over a 24-year period show approximately 17 years out of 24 were at moderate to exceptional drought conditions, indicating drought occurred 70% of the time. Of those 17 years, 9 years were extreme to exceptional for 53% of the 17 drought years.

Graph 1. NOAA drought index for the Little Book Cliffs Wild Horse Range LBCWHR area since 2000.

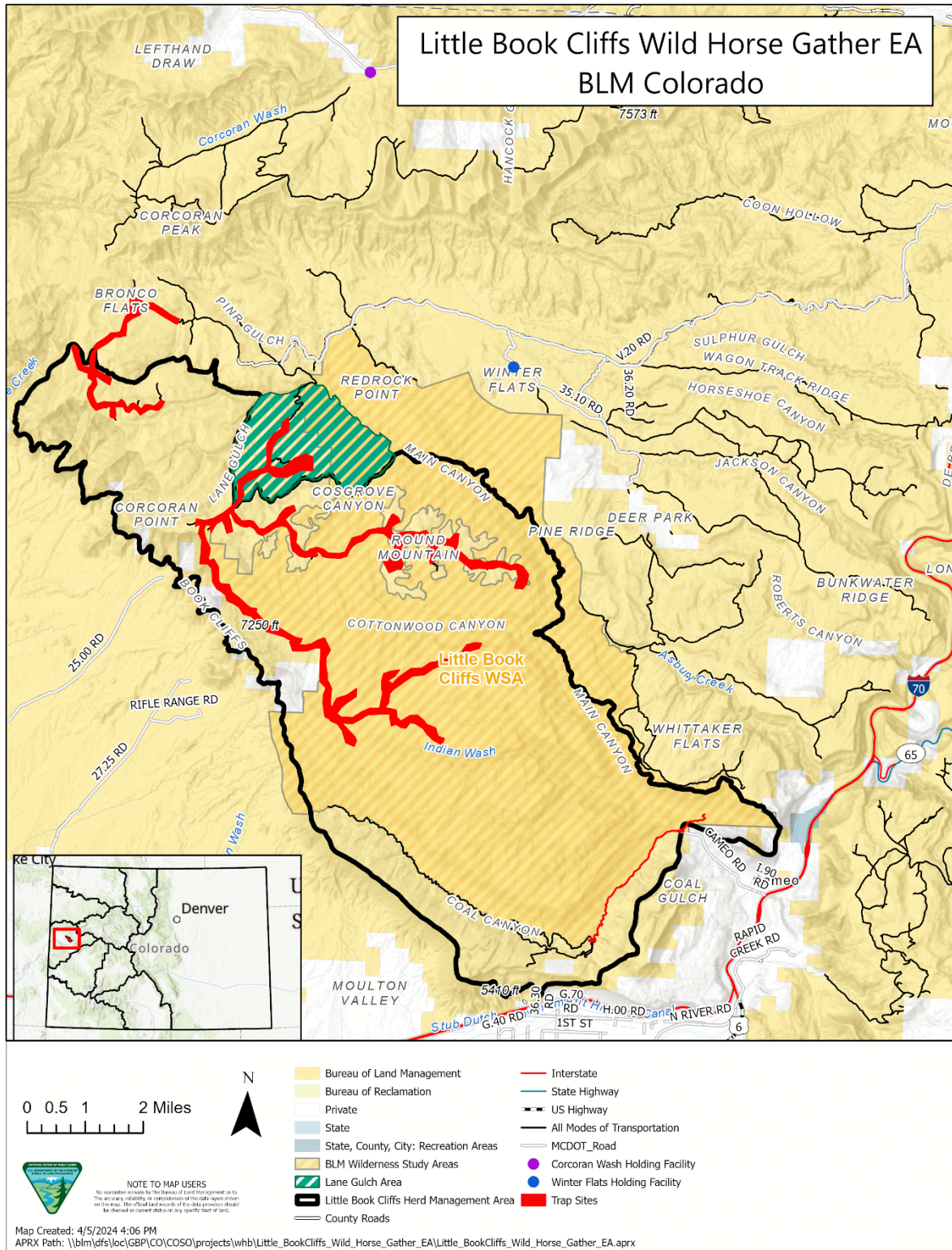


1.1 PROJECT LOCATION AND LEGAL DESCRIPTION

PROJECT LOCATION

The BLM GJFO Little Book Cliffs Wild Horse Range is located northeast of Grand Junction, Colorado and directly northwest of Palisade, Colorado.

Map 1.1-1: Geographic setting of Little Book Cliffs Wild Horse Range



LEGAL DESCRIPTION

Little Book Cliffs Wild Horse Range

6th Principal Meridian, Colorado

T. 9 S., R. 99 W., secs. 18, 19, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, and 36.

T. 9 S., R. 100 W., secs. 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 35, and 36.

T. 10 S., R. 98 W., secs. 7, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, and 32.

T. 10 S., R. 99 W., secs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 22, 23, 24, 25, 26, 27, 34, 35, and 36.

T. 10 S., R. 100 W., sec. 1.

T. 11 S., R. 98 W., secs. 4, 5, and 6.

T. 11 S., R. 99 W., secs. 1 and 2.

Ute Principal Meridian

T. 1 N., R. 1 E., Secs. 1, 2, 3, 10, 11, 12, 13, 14, 15, and 24.

Lane Gulch Area

6th Principal Meridian, Colorado

T. 9 S., R. 99 W., secs. 17, 18, 19, 20, 21, 28, 29, and 30.

1.2 PURPOSE AND NEED

The Bureau of Land Management (BLM) has determined, based on review of wild horse population surveys, distribution, and ecological condition data, an excess population of wild horses exists within the Little Book Cliffs Wild Horse Range. Removing excess wild horses from the LBCWHR is consistent with Section 3 of the Wild and Free-Roaming Horses and Burros Act of 1971 (WFRHBA), 16 U.S.C. § 1333.

The purpose of the Proposed Action is to remove excess wild horses from inside and outside the Little Book Cliffs Wild Horse Range, manage wild horses to achieve and maintain established AML ranges, reduce the wild horse population growth rates using approved population control methods, and prevent additional and unnecessary degradation of public rangelands associated with the overpopulation of excess wild horses.

The need for the action is to protect and improve current rangeland health for the preservation of current AML ranges, and to restore a thriving natural ecological balance and multiple-use relationship on public lands, consistent with the provisions of Section 1333(b) of the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA).

The EA follows the guidance provided in the Permanent Instruction Memorandum No. 2019-004 Issuance of Wild Horse and Burro Gather Decision (PIM No. 2019-004). This memorandum guides BLM offices to analyze various wild horse management actions to meet the purpose of and need for action and to analyze management actions over multiple years. This plan enables BLM to determine the effectiveness of the Proposed Action at successfully achieving and maintaining population levels within AML for the LBCWHR.

Factors such as weather, water and forage availability, animal behavior, and the administration of fertility control can all increase the amount of time needed to reach AML. Bait and water trapping

along with fertility control treatments and continued monitoring, as noted in the EA, would continue to support objectives. The multiple year time frame allows management actions to occur, monitor achievement of objectives, and ensures the herd would achieve and be managed within AML.

1.3 DECISION TO BE MADE

The BLM Field Manager will decide whether to approve the proposed LBCWHR management project that includes a gather in 2024 based on the analysis contained in this EA, to achieve management objectives of maintaining the LBCWHR population within the established AML ranges (90 to 150), protect the rangeland from deterioration resulting from excess wild horse populations, and implement population control methods during and after gathers. Under the National Environmental Policy Act (NEPA). The BLM must determine if there are any significant environmental impacts associated with the Proposed Action warranting further analysis in an Environmental Impact Statement (EIS). The BLM Field Manager may choose to: a) authorize the project as proposed, b) authorize the project with modifications, c) authorize an alternative to the Proposed Action or combination of alternatives, or d) not authorize the project at this time.

Adjustments to AML, Wilderness Study Area designations, renewable energy, and locatable or leasable minerals are outside the scope of the purpose and need for this project and will not be addressed.

1.4 PLAN CONFORMANCE REVIEW

PLAN CONFORMANCE REVIEW: The Proposed Action is subject to and has been reviewed for conformance with the Grand Junction Field Office Resource Management Plan (RMP) (43 CFR §1610.5-3:

Name of Plan: Grand Junction Field Office Resource Management Plan

Date Approved: August 2015

Decision Number and Page: WHS-Goal-01, WHS-OBJ-02, WHS-MA-03, and WHS-MA-04; page 61

Decision Language:

WHS-Goal-01: Manage the administratively designated Little Book Cliffs Wild Horse Range (LBCWHR) to sustain a healthy viable wild horse population while maintaining a thriving natural ecological balance of resources and uses.

WHS-OBJ-02: Emphasize management of wild horses in LBCWHR.

WHS-MA-03; Manage the LBCWHR (35,300 acres) at an appropriate management level (AML), currently identified as a range of 90 to 150 wild horses. The appropriate management level is a dynamic number that will be adjusted as range conditions warrant and in accordance with the Wild Horse Management Plan, Population Management Plan, and BLM policy.

WHS-MA-04: Utilize periodic removals and/or fertility control to maintain the AML.

VEG-GOAL-01: Restore and maintain healthy, productive plant communities of native and other desirable species at self-sustaining population levels commensurate with the species and habitats' potentials. Ensure plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain.

RMP Stipulations and Restrictions:

No Surface Occupancy

NSO-4: *Lentic Riparian Areas (including springs, seeps, and fens)*. Prohibit surface occupancy and surface-disturbing activities within a minimum distance of 100 meters (328 feet) from the edge of the riparian zone. Standard exceptions apply; see RMP Appendix B.

NSO-12: *ACECs*. Prohibit surface occupancy and surface disturbing activities in the following ACECs to protect threatened, proposed, candidate, and sensitive plants. (Refer to the 2015 GJFO RMP, Appendix B.)

- Mt. Garfield (scenic values)

NSO-13: *Current and Historically Occupied and Critical Habitat of Threatened, Endangered, Proposed, and Candidate Plant and Animal Species*. Prohibit certain surface uses, as specified in Appendix B, to protect threatened, endangered, proposed, and candidate plants and animals from indirect impacts, loss of immediately adjacent suitable habitat, or impacts to primary constituent elements of critical habitat as designated by USFWS. Maintain existing buffer distances where pre-existing disturbance exists, and reduce redundancies in roads to minimize fragmentation, and minimize direct impacts from motorized and mechanized users of roads, routes, and trails. In undisturbed environments and ACECs, prohibit new disturbance within 200 meters (656 feet) of current and historically occupied and suitable habitat. This stipulation includes emergency closures of roads where damage to T&E habitat has occurred (Refer to Appendix B). See Figures 2-13 in the GJFO RMP, Appendix A. Standard and special exceptions apply (2015 GJFO RMP, Appendix B).

NSO-36: *Little Book Cliffs Wild Horse Range*. Prohibit surface occupancy and surface-disturbing activities in the LBCWHR (Refer to Appendix B). See Figures 2-13 in Appendix A. Standard and special exceptions apply (2015 GJFO RMP, Appendix B).

NSO-43: *Wilderness Study Areas*. Prohibit surface occupancy and surface-disturbing activities in WSAs in accordance with BLM Manual 6330, Management of Wilderness Study Areas (BLM 2012i)). Standard exceptions apply (2015 GJFO RMP, Appendix B).

VISUAL CLASS I NSO CO: No surface occupancy or use is allowed in:

- VRM Objective Class I areas; Standard exceptions apply; see GJFO RMP, Appendix B.

CSU-9: *BLM Sensitive Plant Species Occupied Habitat*. For plant species listed as sensitive by BLM, special design, construction, and implementation measures within a 100-meter (328 feet) buffer from the edge of occupied habitat may be required. In addition, relocation of operations by more than 200 meters (656 feet) may be required.; see 2015 GJFO RMP, Appendix B.

CSU-30: *VRM Class II*. Apply CSU (site-specific relocation) restrictions to fluid mineral leasing and other surface-disturbing activities within all areas designated as VRM Class II. Require that surface-disturbing activities meet the objectives of VRM Class II. Specific exceptions apply; see 2015 GJFO RMP, Appendix B.

CSU-31: *Recreation*. Apply CSU (site-specific relocation) restrictions to surface occupancy and surface-disturbing activities to minimize conflicts with developed (and future) recreation sites and to mapped (and future) national/regional trails, local system trails that connect communities, and trailheads and interpretive sites with exceptional recreation values or significant public interest. Standard exceptions apply; see 2015 GJFO RMP, Appendix B.

Apply this stipulation to the following sites that lie outside of designated RMAs:

- Low Gap Recreation Site

GEOLOGY SOIL NSO CO: No surface occupancy or use is allowed on lands with soils, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or tribal agencies that are analyzed and accepted by the BLM, with the following special characteristics: Baxter/Douglas Pass Slump Area and the Plateau Creek Slump Area. Standard exceptions apply; see 2015 GJFO RMP, Appendix B.

TL-20: *BIG GAME WINTER RANGE*. Prohibit surface occupancy and surface-disturbing activities from December 1 to May 1 to protect big game winter range as mapped by the CPW. Certain areas and/or routes within big game winter range may be closed to foot, horse, motorized, and/or mechanized travel from December 1 to May 1. Standard and special exceptions apply; see 2015 GJFO RMP, Appendix B.

BIG GAME PRODUCTION TL CO: No surface use is allowed during the following time period(s) in big game production areas, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or tribal agencies that are analyzed and accepted by the BLM:

Prohibit activities, including motorized travel, in elk production areas from May 15 to June 15; in antelope production areas from April 15 to June 30; in Rocky Mountain bighorn sheep production areas from April 15 to June 30; in Moose production areas from April 15 to June 30; and in desert bighorn sheep production areas from February 1 to May 1.

WILDLIFE SENSITIVE RAPTOR NESTS TL CO: No surface use is allowed within an 805-meter (0.5-mile) radius of active or inactive raptor nests, as mapped in the Resource Management Plan, BLM's GIS database or other maps provided by local, state, federal or

tribal agencies that are analyzed and accepted by the BLM, during the following time period(s), or until fledging and dispersal of young:

- ☐ Ferruginous hawk nests, including any alternate nests: February 1 to July 15.
- ☐ Goshawk nest sites: March 1 to September 30.
- ☐ Peregrine and prairie falcon nest cliff(s): March 15 to July 31.

TL-13: *GOLDEN EAGLE NEST SITES*: Prohibit human encroachment within an 805-meter (0.5-mile) radius of active golden eagle nests and associated alternate nests, as mapped in the RMP, BLM's GIS database, or other maps provided by local, state, federal, or tribal agencies that are analyzed and accepted by the BLM, during the following time period, or until fledging and dispersal of young: December 15 to July 15.

1.5 RELATIONSHIP TO STATUTES, REGULATIONS, OTHER NEPA DOCUMENTS

The Proposed Action also is in conformance with the Little Book Cliffs Herd Management Area (HMA) Plan written in 1979, as revised in 1984 and 1992. In 2002, the Little Book Cliffs PMP was prepared and amended the HMAP (Appendix A and B). The EA for the management plan and PMP along with gather plan EAs prepared in 2002, 2004, and 2007 analyzed and supported decisions to manage the wild horse population between 90 to 150 wild horses. These EAs also analyzed the fertility control program within the LBCWHR.

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

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

The Proposed Action is consistent with all applicable laws and regulations at Title 43 Code of Federal Regulations (43 CFR) § 4700, 43 CFR §4710.01 and policies.

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

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

43 CFR § 4720.1 Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately....43 CFR § 4740.1 (a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All such use shall be conducted in a humane manner. (b) Before

using helicopters or motor vehicles in the management of wild horses or burros, the authorized officer shall conduct a public hearing in the area where such use is to be made.

1.6 COLORADO STANDARDS FOR PUBLIC LAND HEALTH

In January 1997, the Colorado State Office of the BLM approved the Standards for Public Land Health and amended all RMPs in the State to include the Standards. The Standards describe the conditions needed to sustain public land health and apply to all uses of public lands.

Standard 1: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, landform, and geologic processes.

Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods.

Standard 3: Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitats potential.

Standard 4: Special status threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Standard 5: The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado.

Because standards exist for each of these five categories, a finding must be made for each of them in an environmental analysis. These findings are in section 5 of this document.

2. PROPOSED ACTION AND ALTERNATIVES

The purpose of this section is to provide information on the Alternative A (No Action), Alternative B (Proposed Action), and Alternative C (No IUD or Mare to Stallion Ratio Adjustments). Alternatives considered but not analyzed in detail are also discussed.

2.1 ALTERNATIVES ANALYZED IN DETAIL

2.1.1 ALTERNATIVE A – NO ACTION ALTERNATIVE

The No Action Alternative provides a baseline for impact analysis. Under this alternative, the gather operations would not occur at this time, horse numbers would continue to increase, but ongoing fertility control would continue, along with the collection of herd and range monitoring data consistent with existing decisions in the 2015 Grand Junction Resource Management Plan. The proposed IUD and horse augmentation fertility control methods would not be authorized. Under the existing fertility control program, the population growth rate would continue to grow from 10 to 15% annually instead of the nationally documented 15 to 25% growth rate per year. The amount of fertility control treatments would vary based upon the support BLM receives for

this work. The BLM may improve fertility control efforts based on support from the State of Colorado and local working groups which may reduce growth rates even further but would not address the issue of excess horses.

2.1.2 Management Actions Common to Alternatives B and C

Both Alternatives B and C would allow for ongoing and expanded fertility control treatments as well as an initial gather with removal of horses to get population numbers within AML. Follow-up gathers may be conducted over a multi-year period, if necessary, with the administration of fertility control vaccines to horses that are returned to the range. All gather activities would be in accordance with the Comprehensive Animal Welfare Program (CAWP, BLM IM 2021-002).

The primary gather techniques would be the helicopter-drive as well as water and bait trapping. The use of roping from horseback could also be used when necessary. Multiple, temporary gather sites (traps) would be used to gather wild horses both from within and outside the LBCWHR. In addition to public lands, private property may be utilized for gather sites and temporary holding facilities (with the landowner's permission) if necessary, to ensure accessibility and based on prior disturbance.

Use of private land would be subject to the CAWP Standards (Appendix D) and with written approval and authorization of the landowner.

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

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

2.1.2.1 Helicopter-Drive Trapping

The BLM would utilize a contractor to perform the gather activities in cooperation with the BLM. The contractor would be required to conduct all helicopter operations in a safe manner and in compliance with Federal Aviation Administration (FAA) regulations 14 CFR § 91.119, BLM WO IM No. 2010-164 (public observation at wild horse and burro gathers), helicopter landings would not be allowed in wilderness except in the case of an emergency.

Helicopter-drive trapping with assisted roping may be necessary to meet management objectives to capture the highest percentage of wild horses possible in the shortest amount of time. The appropriate gather method would be decided by the Wild Horse and Burro Specialist based on the location, accessibility of the animals, local terrain, vegetative cover, and available sources of water and forage. The use of roping from horseback could also be used when necessary. Based on wild

horse watering locations in this area, it is estimated that multiple trap sites may be used during trapping activities.

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

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

2.1.2.2 Bait and Water Trapping

Bait and water trapping would be used as appropriate to gather wild horses efficiently and effectively. The Comprehensive Animal Welfare Program Standards for bait and water trapping are found in Appendix D. Bait and water trapping may be utilized when wild horses are in an area where there is a limited resource (such as food or water). The use of bait and water trapping, though effective in specific areas and circumstances, would not be timely, cost-effective, or practical as the primary or sole gather method for the LBCWHR without first reaching low to mid AML and maintaining an active fertility darting program. However, water or bait trapping could be used as a supplementary or maintenance approach to achieve the desired goals of Alternatives B and C in portions of the LBCWHR. Bait and water trapping generally require a longer window of time for success than helicopter drive trapping. Although the trap would be set in a high probability area for capturing excess wild horses residing within the area and at the most effective time periods, personnel and time are required for the horses to acclimate to the trap and decide to access the water and bait.

Trapping involves setting up portable panels around an existing water source or in an active wild horse area, or around a pre-set water or bait source. The portable panels would be set up to allow wild horses to go freely in and out of the corral until they have adjusted to it. When the wild horses fully adapt to the corral, it is fitted with a gate system. The adaptation of the horses creates a low stress trapping method.

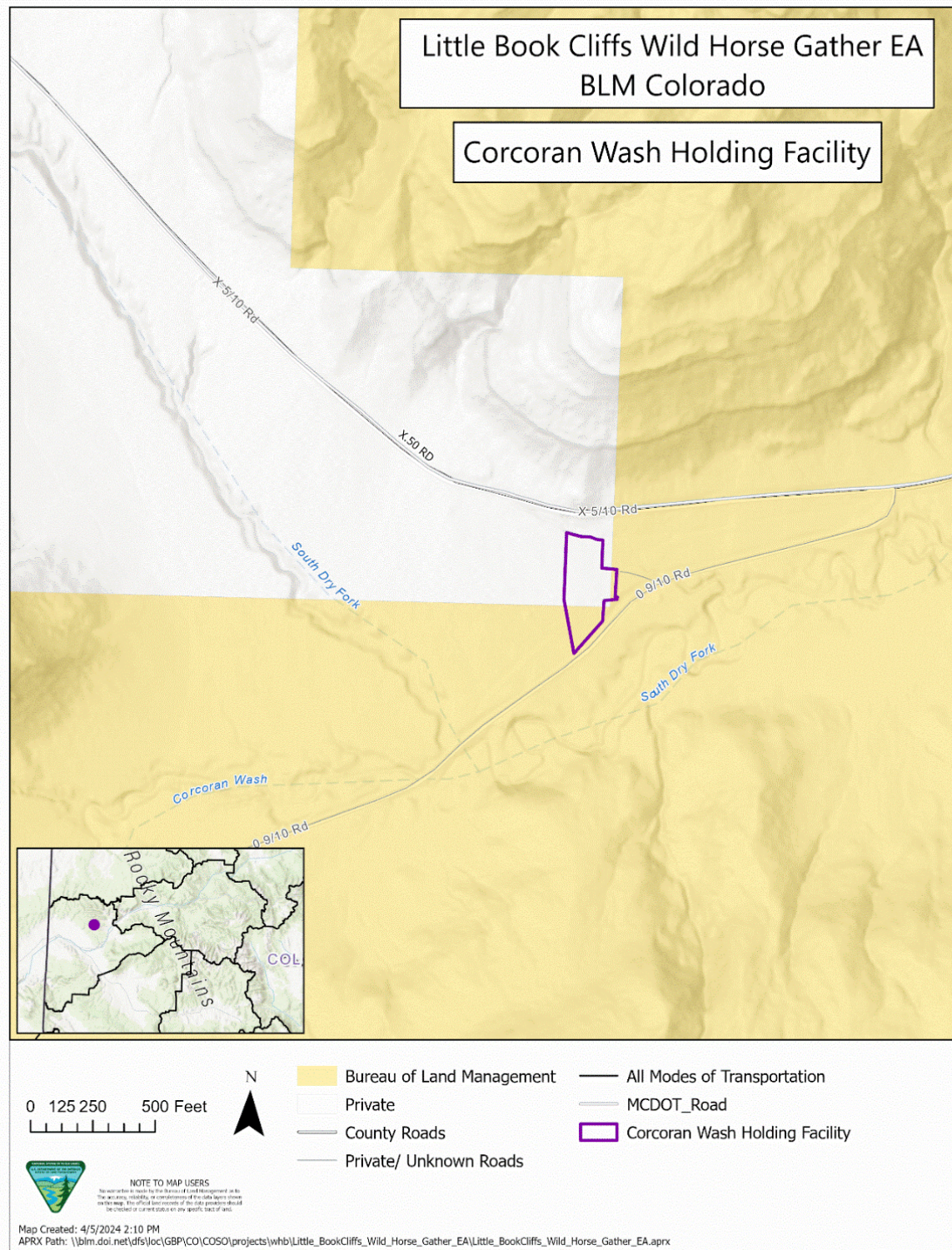
Gathering excess horses using bait and water trapping could occur at any time of the year and traps would remain in place until the target numbers of animals are removed. As the proposed bait and water trapping in this area is a lower stress approach to gathering wild horses, such trapping can continue into the foaling season without harming the mares or foals.

2.1.2.3 Gather Related Temporary Holding Facilities (Corrals)

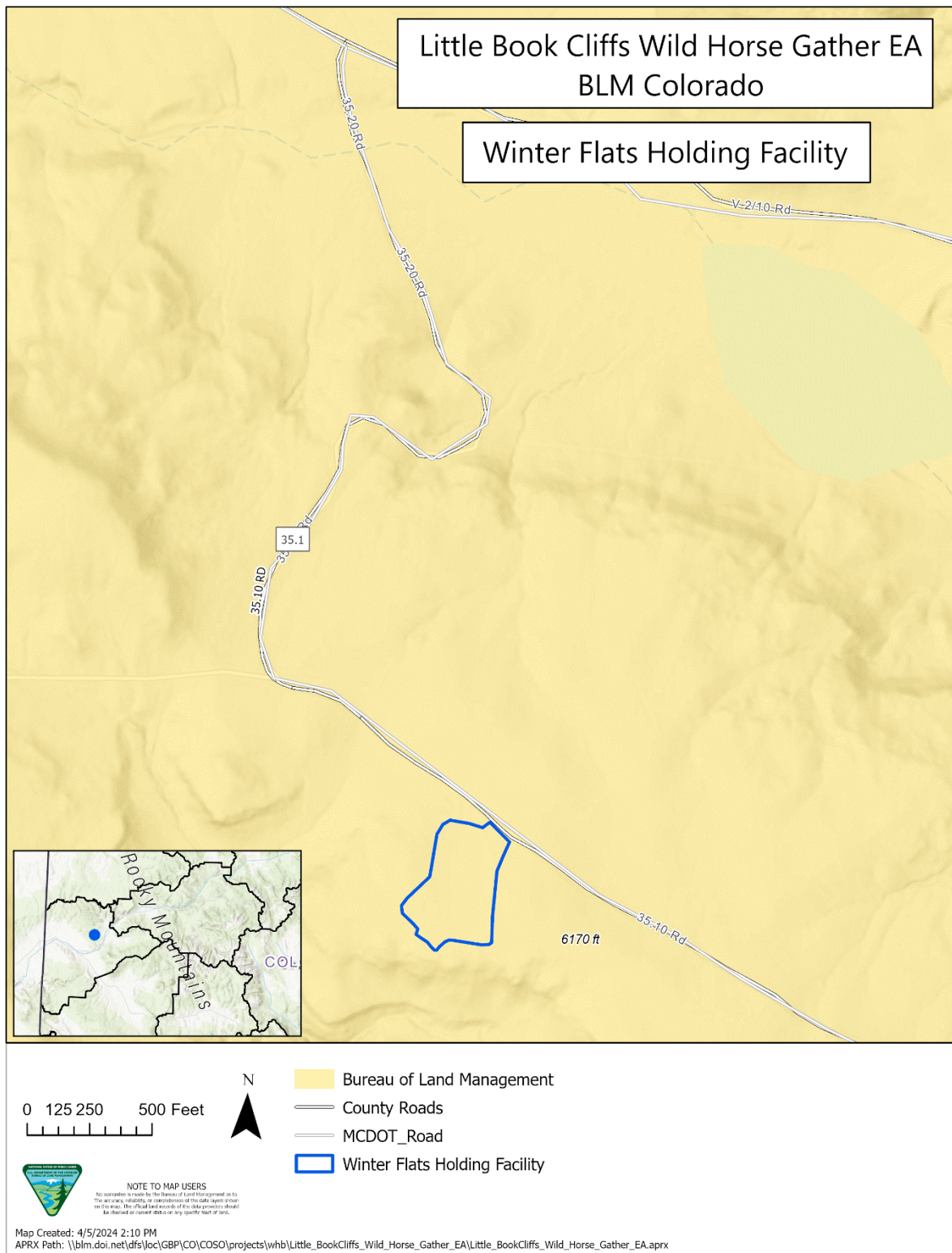
Wild horses gathered would be transported from the gather sites to a temporary holding corral. At temporary holding corral wild horses would be sorted into different pens. Mares would be identified for fertility control and treated at the corrals. The horses would be provided high quality hay and water. At the temporary holding facility, a veterinarian when present, would provide recommendations to the BLM regarding care and treatment of recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness, or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (AVMA), as supported by BLM PIM 2021-007 Euthanasia of Wild Horses and Burros Related to Acts of Mercy, Health or Safety.

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

Map 2.1.2.3-1: Corcoran Wash Holding Facility



Map 2.1.2.3-2 Winter Flats Holding Facility



2.1.2.4 Genetic Diversity and Movement of Horses

Herd health and characteristics data would be collected as part of continued monitoring of the wild horse herd. Genetic samples would be compared to prior baseline data collected for continued monitoring of genetic diversity within the LBCWHR and Lane Gulch Area. Additionally, samples may be analyzed to further assess herd ancestry. In the event, genetic diversity sampling indicates necessary (BLM 2010), captured horses may be moved between areas of the LBCWHR, or wild horses from other suitable HMA(s) may be introduced to augment genetic diversity.

2.1.3 ALTERNATIVE B – PROPOSED ACTION

The wild horse gather plan would allow for an initial gather and follow-up gathers to be conducted over a multi-year period, if necessary to maintain AML.

These actions are summarized in the sections below:

- Fertility Control Treatments
- Gather and removal of excess wild horses, with a helicopter drive trap with assisted roping where necessary, to achieve a population of approximately 105 to 120 horses
- Selective Removal, Augmentation, and Transport to Other Areas

Fertility control methods administered during gathers, include approved immune-contraceptive vaccines, flexible IUDs, and maintaining a male to female sex ratio that approximates 50:50 ratio in PopEquus modeling. The ratio of males to females, returned to the range after gathers, can be changed, and modeled again in PopEquus, depending on future sex composition of the herd.

In addition, BLM would continue gathers and removals (helicopter-drive trap with assisted roping where necessary, or bait and water trap) as necessary to continue to manage the population at AML. Furthermore, during the multi-year period BLM would continue to conduct bait and water trap gathers to administer fertility control, address distribution issues, and manage for drought and wildfire impacts.

If genetic diversity monitoring indicates it is needed (BLM 2010), LBCWHR horses could be relocated from one area of the range to another, or wild horses could be introduced horses from other HMA(s) to maintain genetic variability. In addition, if specific horses contributing to genetic diversity are continually leaving the LBCWHR the horse(s) may be moved from one area to another to curtail the issue.

The desired population goal would be to have a horse herd that continues to grow, but at low annual rates (i.e., 2 to 5% per year). For follow-up gather events, targeted levels of removals and fertility control treatments could be informed by continued population projection modeling with the PopEquus model (i.e., Appendix B). For additional information on Population Growth Suppression Methods, please see the following section 2.1.3.1.

Excess wild horses removed from the range would be transported to a temporary holding facility in the Grand Junction area and then transported to a BLM holding facility or a BLM approved facility for preparation procedures.

Two temporary holding facilities on BLM managed public lands have been identified, Map 2.1.2.3-1 and 2.1.2.3-2, on the project geographic setting map and individual facility maps. One is located on Dry Fork Road north of De Beque and is at an existing corral. The other is on a reclaimed well pad site off V 2/10 Road west of De Beque. The contractor would install temporary panels to hold horses in until shipping. Mares would also be held for up to 30 days post gather for fertility control methods to be administered. The horses would be held up to one week before shipping and would be fed weed free hay. Temporary watering tanks would also be placed in the holding area. Humane euthanasia would be administered when necessary according to BLM specification in PIM#2021-007. Remains would either be transferred to the local landfill or a bury pit would be constructed on site and be approximately 6 feet by 6 feet wide and 4 to 6 feet deep and would be placed within the mapped holding area. The holding area would also serve as a staging area for equipment used in the gather operations.

Herd characteristic objectives and removal considerations are outlined in the 2002 Population Management Plan (Appendix A in the EA). Priority would be given to retaining dominant stallions, established lead or partner mares, and reproductively successful mares. As such, the BLM would use selective gather criteria with the desired age of removed horses being 5 years of age or younger and horses 10 years and older. Horses 20 years of age or older would be returned to the range unless they needed to be removed to achieve gather objectives. The BLM would not remove older horses that are physically unable to survive the gather operation or transport from the range. Achieving the desired result, in terms of a managed herd size, would be the priority and may have an impact on the selection process.

During initial and any necessary subsequent gathers, while in the temporary holding corral and when results warrant, horses would be identified for removal or release based on age, gender, and other characteristics. As a part of periodic sampling to monitor wild horses' genetic diversity in the LBCWHR (i.e., Cothran 2003, 2014, 2020), hair follicle samples would be collected from a minimum of 30 horses, with the intent to sample at least 10 individuals from each of the different use areas within the range (North Soda, Monument Rocks, Low Gap/Round Mountain, Main/Coal Canyons). Samples would be collected for analysis to assess the levels of observed heterozygosity, which is a measure of genetic diversity (BLM 2010) and may be analyzed to determine relatedness to established breeds and other wild horse herds. If this genetic diversity monitoring indicates that observed heterozygosity is lower than desired (BLM 2010), then genetic diversity could be augmented by transporting some trapped wild horses to other parts of the range or introducing individuals to the herd from a different HMA. The selection of individuals to move or introduce may be influenced by color, consistent with the 2002 plan (Appendix A).

During the initial or any necessary subsequent gathers, mares treated with fertility control methods would be added to the current database of treated mares and monitored for success of fertility control, which can be measured in terms of foaling. Depending on age, genetics, and herd demographics each mare may be treated selectively, dependent on the type of fertility control selected. In addition, mares that have been treated with fertility vaccines prior to the gather may be boosted while in the temporary holding or trap.

2.1.3.1 Population Growth Suppression Methods

The Proposed Action would include population growth suppression methods that may include fertility control vaccines and flexible IUDs. In cases where a booster vaccine is required to increase vaccine effectiveness, mares could be held for approximately 30 days and given a booster shot prior to release. Through multiple gathers, BLM would treat/retreat mares with fertility control to help meet herd management objectives. The use of any new fertility control method would conform to current best management practices at the direction of the National Wild Horse and Burro Program. All mares that are trapped and selected for release would be treated with fertility control treatments (PZP vaccines [i.e., ZonaStat-H, PZP-22], GonaCon-Equine vaccine or most current formulation, or flexible IUDs) to reduce pregnancy rates in the following year(s), unless fertility treatment records and population modeling indicate no additional mares need to be treated at that time to achieve and maintain population growth rate goals. Standard Operating Procedures for application of existing immune-contraceptive vaccines and flexible IUDs are in Appendix B. Sex ratio adjustment could also be used, to cause the herd to have approximately equal numbers of females and males; this 50:50 sex ratio is not usually considered a population growth suppression method, but it may cause a marginal reduction in foaling rate, as explained below, because the starting herd contains more mares than stallions. A more thorough analysis of effects for different fertility control methods and sex ratio adjustment is included in EA section 3.5 and in Appendix C.

BLM will continue fertility control efforts by darting selected mares. Once the herd size in the project area is at AML and population growth seems to be stabilized at or near the desired rate, BLM would decide the required frequency of new mare treatments and mare re-treatments with PZP vaccine, GonaCon-Equine vaccine, or flexible IUDs, to maintain the number of horses within AML. For example, the rates of PZP vaccine and GonaCon-Equine vaccine use required to achieve population growth level goals (between 2% to 5% per year) could be estimated based on records of how many living mares in the herd had been treated with those fertility control methods previously, the number of those treatments for each mare, and the time since last treatment for each mare.

2.1.3.1-1 Porcine Zona Pellucida (PZP) Vaccine

Immunocontraceptive Porcine Zona Pellucida (PZP) vaccines are widely used to reduce wild horse fertility rates, including by the National Park Service, United States Forest Service, and the Bureau of Land Management. Taking into consideration available literature on the subject, the National Research Council concluded in their 2013 report that PZP vaccines were one of the preferred available methods for contraception in wild horses and burros (NRC 2013). PZP vaccine is commercially produced as ZonaStat-H, an EPA-registered product (EPA 2012). PZP vaccine can easily be remotely administered (dart-delivered) in the field, but only where mares are relatively approachable. Other forms of PZP vaccine include PZP-22, which is a formulation of PZP in polymer pellets that can lead to a longer immune response (Turner et al. 2002, Rutberg et al. 2017, Carey et al. 2019) and SpayVac, which is a formulation in which liposomes may help to prolong immune response duration (Bechert et al. 2022). Under the Proposed Action, mares being treated with a PZP vaccine for the first time would receive a liquid primer dose with either ZonaStat-H or PZP-22-time release pellets. If SpayVac is shown in new peer-reviewed literature to be safe and effective in horses, it may be used as a PZP vaccine treatment. For mares to be treated with a PZP vaccine, BLM would re-apply PZP vaccine or initiate new treatments to control population growth

rates (i.e., Schulman et al. 2024). Application methods could be by hand in a working chute during or after gathers, or through field darting if mares in some portions of the LBCWHR prove to be approachable. PZP vaccines can safely be reapplied as necessary to reduce individual fertility rates. Some mares may not develop strong enough immune responses to PZP vaccines to cause a reduction in fertility; these animals may be good candidates for other forms of fertility control such as use of GonaCon-Equine vaccine or a flexible IUD. Even with repeated booster treatments of PZP, it is expected most, if not all, mares would return to fertility, and not all mares within the LBCWHR would be expected to be treated or receive boosters.

2.3.3.1-2 Gonadotropin Releasing Hormone (GnRH) Vaccine, GonaCon

As with PZP vaccines, the immune-contraceptive GnRH vaccine GonaCon-Equine is being widely used to reduce wild horse fertility rates in herds managed by the National Park Service and Bureau of Land Management. Like PZP vaccines, GonaCon vaccine was one of the preferred available methods for contraception in wild horses and burros (NRC 2013). GonaCon-Equine is approved for use by authorized federal, state, tribal, public, and private personnel, for application to wild and feral equids in the United States (EPA 2013, 2015). Its use is appropriate for free-ranging wild horse herds and can be delivered by hand injection or by darting (Miller et al. 2017).

As with other contraceptives applied to wild horses, the long-term goal of GonaCon-Equine use is to reduce or eliminate the need for gathers and removals by reducing individual mare fertility rates (NRC 2013). GonaCon-Equine vaccine meets BLM requirements for safety in mares and the environment and is produced as a pharmaceutical-grade vaccine, using aseptic manufacturing techniques to deliver a sterile vaccine product (Miller et al. 2013). If stored at 4° C, the shelf life is 6 months (Miller et al 2013).

Under the Proposed Action, the BLM would return to the LBCWHR as needed to re-apply GonaCon-Equine and initiate new treatments to maintain contraceptive effectiveness in controlling population growth rates. As with PZP vaccines, booster dose effects for GonaCon-Equine may lead to increased effectiveness of contraception (Baker et al. 2018, 2023), which is generally the intent. GonaCon-Equine can safely be reapplied as necessary to control the population growth rate. Even with one booster treatment of GonaCon-Equine, it is expected that most, if not all, mares would return to fertility at some point (Baker et al 2023). The average duration of effect after a booster dose depends on the method of delivery, with dart-delivered boosters apparently conferring shorter duration of immune response than hand-injected booster doses. All indications are that this vaccine, like PZP vaccines, works by means of an immune response. The expected rate for the return to fertility rate in mares boosted more than once with GonaCon-Equine has not been quantified but may be as long or longer than the duration of effects documented by Baker et al (2023) after one booster dose.

2.1.3.1-3 Flexible Intrauterine Devices (IUDs)

Flexible IUDs are considered a temporary fertility control method that does not generally cause future sterility issues (Daels and Hughes 1995). It is expected that flexible IUDs would only be inserted in non-pregnant (open) mares, and only by a veterinarian. Wild mares receiving flexible IUDs would be checked for pregnancy prior to insertion of a flexible IUD. For horse and veterinarian safety, any candidate mares would need to be transported from the capture site to a wild horse handling facility with a hydraulic padded squeeze chute and a split rear door. BLM has

used flexible Y-shaped silicone IUDs (EPA 2020) to control fertility as a wild horse and burro fertility control method in management applications in Utah and Wyoming. The BLM has supported and continues to support research into the development and testing of effective and safe IUDs for use in wild horse mares (Baldrighi et al. 2017, Holyoak et al. 2021). However, existing literature on the use of flexible IUDs in horses allows for inferences about expected effects of any management alternatives that might include use of flexible IUDs and support the apparent safety and efficacy of some types of flexible IUDs for use in horses (Appendix C).

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

2.1.3.1-4 Sex Ratio Adjustment

Sex ratio adjustment, leading to a reduced fraction of mares in the herd, can be considered a form of contraceptive management, insofar as it can reduce the realized per-capita growth rate in a herd. Under the proposed Alternative, the BLM would be changing sex ratio to achieve a roughly 50% male to 50% female ratio, which is consistent with a stated goal in the Population Management Plan (Appendix A). These action alternatives would not be intended to skew sex ratios in a way that leads to a 60% male to 40% female ratio. BLM guidelines indicate that sex ratio adjustments that lead to approximately 60% males should only be considered on HMAs where AML is above 150 (BLM Handbook H-4700-1, 2010). At this time, the herd includes more mares than stallions – this may be partially a result of higher mare survival rates that are known to occur when mares are successfully treated with fertility control vaccines (Goodloe 1991, Turner and Kirkpatrick 2002, Ransom et al. 2014a). Reducing the proportion of breeding females in a population (as a fraction of the total number of animals present) leads to fewer foals being born, relative to the total herd size, so reducing the sex ratio from a majority female herd to a herd with 50:50 sex ratio is expected to reduce the number of foals born relative to the adult herd size. Even if marginal, the associated decrease in growth rate may incrementally extend the time between gathers, and reduce impacts on-range, and costs off-range.

2.1.3.6 Design Features

Grand Junction Resource Management Plan:

Soils and Hydrology

1. S-2: When saturated soil conditions exist on access roads or location, or when road rutting becomes deeper than 3 inches, construction or activities shall be halted until soil material dries out or is frozen sufficiently for construction or activities to proceed without undue damage and erosion to soils, roads, and locations.

2. H-45: No operations using chemical processes (except for vegetation management) or other pollutants in their activities will be allowed within 200 feet of any water bodies. This includes staging equipment for refueling, as well as equipment maintenance.

Noxious and Invasive Species

1. WEED 15: Revegetate disturbed soil where appropriate to optimize plant establishment for that specific site. Define revegetation objectives for each site. Revegetation may include topsoil replacement, planting, seeding, fertilization, and certified weed-free mulching as necessary. Use native material where appropriate and feasible.
2. WEED 53: Allow only certified weed-free hay/feed on BLM-administered lands.

Cultural

- All persons in the area who are associated with this project shall be informed that any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (54 USC 300101 et seq., 18 USC § 641, 18 USC § 1170, and 18 USC § 1361). Strict adherence to the confidentiality of information concerning the nature and location of archeological resources would be required.
 - Inadvertent Discovery: The National Historic Preservation Act (NHPA) [54 USC, 36 CFR § 800.13], as amended, requires that if newly discovered historic or archaeological materials or other cultural resources are identified during the Proposed Action implementation, work in that area must stop and the BLM Authorized Officer (AO) must be notified immediately. Within five working days, the AO will determine the actions that will likely have to be completed before the site can be used (assuming in place preservation is not necessary).
 - The Native American Graves Protection and Repatriation Act (NAGPRA) [25 USC § 3001 et seq., 43 CFR § 10.4] requires that if inadvertent discovery of Native American Human Remains or Objects of Cultural Patrimony occurs, any activity must cease in the area of discovery, a reasonable effort made to protect the item(s) discovered, and immediate notice be made to the BLM Authorized Officer, as well as the appropriate Native American group(s) (IV.C.2). Notice may be followed by a 30-day delay (NAGPRA Section 3(d)).
 - The operator may relocate activities to avoid the expense of mitigation and delays associated with this process, if the new area has been appropriately inventoried and has no resource concerns, and the exposed materials are recorded and stabilized. Otherwise, the operator shall be responsible for mitigation costs.
 - The BLM authorized officer will provide technical and procedural guidelines for relocation and/or to conduct mitigation. Upon verification from the BLM authorized officer that the required mitigation has been completed, the operator will be allowed to resume construction.

Other Design Features

General

1. Vehicles and equipment may only be driven on travel routes identified. At the completion of the gather, all facilities must be removed, and routes used for trap access shall be restored to its original condition.

Wilderness Study Area

1. The BLM would not place traps within the Little Book Cliffs Wilderness Study Area (WSA) except for a potential site in lower Main Canyon. Access to this site is via an existing route in the WSA. The BLM would perform maintenance along the route to accommodate full-size vehicles and trailers. Traps along the Coal Canyon Road would be on the outside of the WSA.
2. Trap sites in the Monument Rocks area or up Coal Canyon adjacent to the Little Book Cliffs WSA would be placed on existing routes approved for use in the interim guidance.

Colorado Hookless Cactus (threatened and endangered species)

1. Trap locations will utilize existing areas of disturbances in Coal and Main Canyon to reduce impacts to sensitive and listed plants.
2. Wing fences in Coal Canyon will be placed in the canyon bottom, and sections that tie into the canyon side will be situated up canyon from sensitive areas.
3. Road maintenance in Coal Canyon or Main Canyon will be completed outside of the blooming season (April through July) and will be coordinated with the Grand Junction Field Office ecologist to ensure known occurrences of sensitive plant species are avoided.
4. Portions of the Main Canyon access road will be flagged to mark sensitive areas where ground disturbance will be avoided.
5. If an area with sensitive plants cannot be avoided, project activities will occur outside of the blooming season (April through July) and rare plants will be flagged or fenced as avoidance areas.

Cultural Resources

1. Appropriate site-specific inventory and review for cultural resources and vegetative species of concern would be conducted at each trap site prior to set up if the area has not been previously disturbed.
2. Additional cultural resources inventory may be required before and/or cultural monitoring may be required during any project operations within 100 feet of known cultural sites subject to potential adverse effects.

Vegetation

1. Traps would be situated to minimize impacts to vegetation and soils. Vehicles necessary for set-up and take-down of traps and transportation of excess wild horses away from the

area may only be driven on routes identified for this purpose. At the completion of the gather, the BLM would remove all equipment and the BLM would rehabilitate trap areas so that they are no longer visible. Rehabilitation could include but are not limited to monitoring for and treating noxious and invasive weeds, seeding the area when necessary, dragging in horse droppings, and placing debris across any travel routes necessary to not proliferate new roads.

2. Trap sites would be monitored for noxious weeds over the next several years. All sites would be assessed for post bait trap reseeding.
3. Traps would not be located around springs unless necessary or in areas impacting riparian resources.
4. Disturbed areas would be seeded, and horse droppings would be scattered on the surface with chipped plant debris that would serve to discourage use of the area and ultimately stabilize soils for seeds to germinate.

Soils

1. Trap sites would be in previously disturbed areas and in areas with existing road access to the extent possible.
2. Traps would not occur on soils that are sensitive, saline, or identified to have a risk of mass wasting.

Wildlife

To comply with timing limitations for big game production and wintering areas and raptor nesting areas, helicopter gathers will be limited to between the dates of July 15-December 1 in all areas, except for trap sites in lower Main Canyon and Coal Canyon where the timing limitations will be limited to between July 30 to December 1. There are no timing limitations for bait trapping.

Wild Horses and Livestock

1. All capture and handling activities (including capture site selection) would be conducted in accordance with the CAWP Standards (Appendix D) and recent IMs.
2. Helicopter drive trapping would occur outside of foaling season.
3. All domestic animals, if any, would be removed. As per state law, the “estrays horses” would be turned over to the Colorado Brand Inspector.

Public Health and Safety

1. Refueling of helicopters in the field would be accomplished following FAA regulations. Any spill of fuel or other gather related materials that could be considered hazardous waste would be cleaned up and reclaimed to BLM standards.
2. During gather operations, vehicle access within the LBCWHR would be allowed but temporarily restricted in the vicinity of the current trap sites to prevent interference with gather operations and ensure public and animal safety. Restrictions would include temporary signs or stationed personnel at access sites. Access to all other roads and trails would be unrestricted.

2.1.4 ALTERNATIVE C – NO IUD OR RATIO ADJUSTMENTS

Alternative C is similar to Alternative B except it would not include the use of IUDs, sex ratio adjustment, or transference of animals from one area of the range to another to maintain genetic diversity and address off range issues.

Under Alternative C, the BLM would gather and remove excess wild horses within the project area to return the population levels to the lower end of AML (approximately 90 to 104 horses). Under this alternative, the BLM would gather and administer fertility control vaccines (PZP vaccines, GonaCon-Equine, or other approved vaccine formulation) to most offspring, producing mares, horses meeting the objective criteria presented in the Population Management Plan (Appendix A) that would be returned to the range until the low level of AML is obtained. The combination of these actions would contribute to a zero or low population growth rate within the LBCWHR for approximately 2 to 4 years.

Any follow-up gather activities during the subsequent multi-year phases of this alternative would be conducted in a manner consistent with those described under the Proposed Action (Alternative B).

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The following proposed alternatives for removal of excess wild horses to reach the established AML were considered but eliminated from detailed analysis for the reasons stated below.

2.2.1 Water and Bait Trap as the Sole Removal Method

This alternative would only utilize bait and water trapping to remove excess wild horses. In the past, most gathers within the LBCWHR removed excess wild horse via helicopter drive trap, or a combination of bait trapping and helicopter drive trap. However, Scasta (2020), found mortality rates did not differ by capture (bait trap/drive trap) technique ($P > 0.05$) for acute causes, or chronic or pre-existing conditions. Acute capture-related mortality rates across all wild horse gathers averaged lower than 0.5% which is below a general threshold suggested for wildlife studies (Scasta 2020). Due to these finding this alternative was not carried forward because the impacts are not substantially distinguishable from those analyzed for bait trapping and helicopter use under the Proposed Action.

2.2.2 Gelding of Stallions

This alternative would include gathering horses as described in the Proposed Action alternative but would also include the physical sterilization of stallions as a means of population control. Though gelding can be an effective way of limiting individual horse reproduction, this alternative is not being analyzed because the continuation of mare fertility control by volunteers in conjunction with the BLM, using immunocontraceptive vaccines, has reduced population growth within the LBCWHR to varying degrees over time, and addition of a small number of gelded stallions would not be expected to substantially reduce mare fertility. By itself, it is unlikely gelding would allow the BLM to achieve its horse population management objectives since a single fertile stallion can impregnate multiple mares, and stallions other than the dominant harem

stallion may also breed with some mares. Adequate reduction of female horse fertility rates would be expected to result only if a large proportion of male horses in the population are sterile, because of their social behavior (Garrott and Siniff 1992). A study in which approximately 40% of stallions were gelded did not lead to substantial or lasting reductions in mare fertility rates (King et al. 2022).

2.2.3 Exclusive Use of Field Darting with ZonaStat-H or GonaCon-Equine

This alternative was eliminated from further consideration as the sole method of population reduction and control due to the difficulties inherent in darting wild horses in the project area. Field darting of wild horses typically works in small areas with good access where animals are acclimated to the presence of people who come to watch and photograph them. However, in portions of the LBCWHR, horse behavior limits their approachability and accessibility, so the number of mares expected to be treatable via darting would be insufficient to exclusively control population increases. The ZonaStat-H formulation of PZP also requires a booster given every year following treatment to maintain the highest level of efficacy. Annual darting of wild horses in large areas can be very difficult to replicate and, is at times, unreliable. For these reasons, the alternative of exclusively using field darting to control population dynamics, when not combined with the removal of excess horses, was determined not be an effective or feasible method for applying population controls to wild horses in the LBCWHR.

2.2.4 Use of Wrangler on Horseback Drive-trapping

Use of wranglers on horseback drive-trapping to remove excess wild horses can be somewhat effective on a small scale however the lack of approachability of the animals, this technique would be ineffective and impractical as a substitute for helicopter trapping. Wild horses often outrun and outlast domestic horses carrying riders. Utilizing wranglers on horseback as a gather method would not only be impractical but could also put domestic horses and riders at risk if they are required to pursue wild horses over long distances necessary to locate and gather wild horses. In contrast, helicopter assisted roping is typically only used if necessary and when the wild horses are near the gather site. For these reasons, this method was eliminated from further consideration.

2.2.5 Raising the Appropriate Management Levels for Wild Horses

This alternative was eliminated from further consideration because it does not meet the Purpose and Need of the Proposed Action, is contrary to the WFRHBA which requires the BLM to manage rangelands to prevent range deterioration associated with an overpopulation of wild horses, is not consistent with, Public Rangelands Improvement Act (PRIA) or FLPMA. Monitoring and other historical data collected within the LBCWRH does not indicate an increase in AML is warranted at this time. On the contrary, such monitoring data confirms the need to remove excess wild horses above AML to reverse downward range health trends, promote improvement of rangeland health and ensure safety and health of wild horses. Severe range degradation would occur if an AML reevaluation process were initiated without gathering the excess animals and an even larger number of excess wild horses would ultimately need to be removed from the range to achieve the AML or under emergency conditions to prevent the death of individual animals due to insufficient water and forage resources for the current overpopulation of wild horses.

2.2.6 Wild Horse Numbers Controlled by Natural Means

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

Survival rates for wild horses on western public lands are high (Ransom et al. 2016). In some cases, adult annual survival rates for wild horses exceed 95% (Ransom et al. 2016). None of the significant natural predators from native ranges of the wild equids in Europe, Asia, and Africa — wolves, brown bears, and African lions — exist at all, or in high numbers, on the wild horse ranges in the western United States. Mountain lions are known to predate on horses, primarily foals, in a few herds (Andreasen et al. 2021, Schulman et al. 2024), but predation contributes to biologically meaningful population limitation in only a handful of herds. Andreasen et al. (2021) concluded “At landscape scales, cougar predation is unlikely to limit the growth of feral horse populations.”

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

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

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

and could result in irreversible damage to the range. This degree of resource impact would likely lead to management of wild horses at a greatly reduced level if BLM is able to manage for wild horses at all. For these reasons, this alternative was eliminated from further consideration. This alternative would not meet the Purpose and Need which is to remove excess wild horses from within and outside the LBCWHR and to reduce the wild horse population growth rates to manage wild horses within established AML ranges for a TNEB.

2.2.7 Gathering the LBCWHR to the High end of AML

Under this Alternative, a gather would be conducted to gather and remove enough wild horses to achieve the high end of AML (150 in the LBCWHR) rather than low to mid AML for this LBCWHR. A post-gather population size at high AML would result in AML being exceeded following the next foaling season. This would be unacceptable for several reasons. The AML represents “that ‘optimum number’ of wild horses which results in a thriving natural ecological balance and avoids a deterioration of the range” *Animal Protection Institute*, 109 IBLA 119 (1989). The IBLA has also held that, “Proper range management dictates removal of horses before the herd size causes damage to the rangeland. Thus, the optimum number of horses is somewhere below the number that would cause resource damage” *Animal Protection Institute*, 118 IBLA 63, 75 (1991). The AML established for LBCWHR represents the maximum population for which TNEB would be maintained. Additionally, gathering to high AML, would result in the need to follow up with another gather by the next year and could result in continued over utilization of vegetation resources and damage to important wildlife habitats. Frequent gathers could increase the stress to wild horses, as individuals and as entire herds. This alternative would not meet the Purpose and Need which it is to remove excess wild horses from within and outside the LBCWHR, to reduce the wild horse population growth rates to manage wild horses within established AML ranges (90 to 150) to allow for resource recovery, and to minimize the frequency of gathers needed to remove excess wild horses. The need for the action is to prevent undue or unnecessary degradation of the public lands associated with excess wild horses, to restore a TNEB and multiple use relationship on public lands, consistent with the provisions of Section 1333(b) of the 1971 WFRHBA. For these reasons, this alternative was eliminated from further consideration.

3. PUBLIC INVOLVEMENT

The BLM uses a scoping process to identify potential significant issues in preparation for impact analysis. The principal goals of scoping are to identify issues, concerns, and potential impacts that require detailed analysis. Scoping is both an internal and external process. Internal scoping was initiated when the project was presented to the GJFO interdisciplinary team on January 30, 2024. The BLM began external scoping by posting this project on the GJFO’s ePlanning project page on April 26, 2024. The BLM initiated a 30-day public comment period on the preliminary EA on May 15, 2024.

The BLM received 422 individual public comment submissions on the preliminary EA. The BLM grouped and summarized the comments. The common themes raised in the comments were primarily concerns and questions regarding helicopter gathers, fertility population control methods, population control through natural predation, domestic grazing, harm to horses during and post gather, selling of wild horses, long-term holding facilities, loss of genetic diversity, increasing collaboration with Colorado Wild Horse Working Group, necessity of gathers,

vegetation density and wildfire mitigation, potential impacts on a wilderness study area, BLM's knowledge of the terrain and horses, increasing acres of horse area and AML, working with partner organizations, mare and foal separation, gathering to mid AML, UTV degradation, wild horse and burro motorized use hearing, excess horse determination, and finding additional alternatives beyond Alternatives A and C to reduce the wild horse population. The BLM reviewed and responded to the public comments received on the preliminary EA in Appendix F.

4. ISSUES

4.1 ISSUES IDENTIFIED

The Council on Environmental Quality (CEQ) Regulations state that NEPA documents “must concentrate on the issues that are truly relevant to the action in question, rather than amassing needless detail” (40 CFR § 1500.1(b)). While many issues may arise during scoping, not all the issues raised warrant analysis in an EA. Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a potentially significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts. The following sections list the issues analyzed.

4.2 ISSUES ANALYZED IN DETAIL

The issues included in Table 4.2-1 below are analyzed in detailed in Section 5 of this EA. These issues were identified during public and agency scoping. Impact indicators are used to describe the affected environment for each issue, measure change, and to provide a comparison of the impacts between alternatives.

Table 4.2-1 Issue Statements

Issue	Issue Statement	Impact Indicator	Resources or Programs Affected
Issue 1	How would the wild horse gather impact fugitive dust in the project area?	Emissions of PM ₁₀ , number of wild horses	Air quality, public health and safety
Issue 2	How would the wild horse gather impact erosive soils in the project area?	Acres of erosive soils	Soils and perennial plants
Issue 3	How would the wild horse gather impact water quality, seeps, springs, and watershed health?	Water quality, number of wild horses	Water quality, seeps, and springs
Issue 4	What would be the impacts to vegetative diversity, productivity, vigor, and invasive species from the proposed wild horse gather?	Number of wild horses above, appropriate management level	Vegetation and invasive species
Issue 5	How would Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch be impacted by the wild horse gather?	Acres of habitat	Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch

Issue 6	How would the proposed wild horse gather impact other important wildlife?	Acres of important wildlife habitat	Deer, elk, bighorn sheep, raptors, songbirds, reptiles and amphibians, and other mammals
Issue 7	What would be the impacts to prehistoric and historic cultural resources from the proposed wild horse gather?	Number of known sites, cultural resource potential	Prehistoric and historic cultural resources
Issue 8	How would the wild horse gather impact wilderness characteristics present in the Little Book Cliffs Wilderness Study Area and surrounding lands with wilderness characteristics?	Acres of wilderness study area	Little Book Cliffs Wilderness Study Area; Book Cliffs South and Winter Flats lands with wilderness characteristics inventory units
Issue 9	What would be the impacts to recreational wild horse viewing from the proposed gather?	Number of horses, duration and timing of gather	Recreation
Issue 10	How would the proposed gather impact the Little Book Cliffs wild horse herd?	Number of wild horses within AML.	Wild horse herd

5. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a description of the human and environmental resources that could be affected by the Proposed Action and other alternatives. It also presents comparative analyses of the direct, indirect, and cumulative effects on the affected environment stemming from the implementation of the Proposed Action and other alternatives.

This EA draws upon information compiled in the Grand Junction Field Office RMP (BLM 2015).

5.1 ASSUMPTIONS FOR ANALYSIS

For the purposes of analysis in this EA, the BLM assumed horse populations not maintained within the appropriate AML ranges of 90 to 150 would contribute to rangeland degradation. Based upon existing data and information the BLM also assumed that the horse population that would continue to increase at approximately 10 to 15 percent per year, with the current level of fertility control being administered annually. The BLM anticipates that the wild horse population could increase to approximately 802 animals over the next decade without any fertility treatment. If on-site fertility treatments were maintained, growth would be anywhere from 531 to 579 animals.

5.2 CUMULATIVE IMPACTS

Cumulative effects are defined in the CEQ regulations (40 CFR § 1508.1(i)) as “... effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from actions with individually minor but collectively significant effects taking place over a period of time.”

5.2.1 Cumulative Impacts Analysis Areas

The cumulative impact area for most issues is the project area containing the Little Book Cliffs Wild Horse Range. The BLM has completed wild horse gathers the LBCWHR in the past. The dates, number of horses removed, and justification are provided in Table 5.2.1-1 below.

Table 5.2.1-1 Summary of Previous Gathers

<u>YEAR HORSES REMOVED REASON FOR GATHER</u>		
YEAR	Number of Horses	Reason for Gather
1977	40	Drought and over utilization
1983	45	Health of Vegetation and Soils
1988	44	Health of Vegetation and Soils
1989	40	Drought and over utilization
1992	39	Health of Vegetation and Soils
1996	53	Health of Vegetation and Soils
1997	10	Horses outside the LBCWHR
1999	57	Health of Vegetation and Soils
2002	79	Drought and over utilization
2004	68	Health of Vegetation and Soils
2007	55	Health of Vegetation and Soils
2013	13	Drought and over utilization
2018	55	Drought and over utilization

The LBCWHR is also grazed by wildlife and includes important wildlife habitat.

Approximately 1,500 acres of vegetation treatments (e.g., seeding) have occurred prior to 2010 and approximately 2,800 acres of vegetation treatments (seeding, rollerchop, hydroaxe) have occurred since 2010. There have also been approximately 3,000 acres of prescribed fire and approximately 2,800 acres of wildfire have occurred in the project area since 2003. Vegetation treatments, wildfires and prescribed burns have been seeded with a varying range of success. A seeding treatment on approximately 400 acres is currently proposed and foreseeable in the next year or two.

The cumulative impact area has six natural gas well pads, as well as the Low Gap recreation site that includes a parking lot, picnic shelters, and vault toilets. Other proposed projects include two water catchments one in the North Soda Area and one in the Round Mountain Area of the range.

Other past, present, and reasonably foreseeable actions in the project area include seeding and revegetation projects. Recreation use is characterized by wild horse viewing, dispersed camping, off-highway vehicle (OHV) use, and hunting.

5.3 ANALYSIS OF ISSUES

5.3.1 ISSUE 1: How would the wild horse gather impact fugitive dust in the project area?

Affected Environment

Air quality in the project area is typical of undeveloped regions in the western United States. The closest Class I Airshed is the Maroon Bells Snowmass Wilderness Area located approximately 55 air miles to the southeast.

The primary sources of air pollutants in the region are fugitive dust from the desert to the west of the planning area, unpaved roads and streets, seasonal sanding for winter travel, motor vehicles, and wood-burning stove emissions. Seasonal wildfires throughout the western U. S. may also contribute to air pollutants and regional haze. The ambient pollutant levels are usually near or below measurable limits, except for high short-term increases in PM₁₀ levels (primarily wind-blown dust), ozone, and carbon monoxide. Within the Rocky Mountain region, occasional peak ozone levels are relatively high, but are of unknown origin. Elevated concentrations may be the result of long-range transport from urban areas, subsidence of stratospheric ozone or photochemical reactions with natural hydrocarbons. Occasional peak concentrations of carbon monoxide (CO) and sulfur dioxide (SO₂) may be found in the immediate vicinity of combustion equipment. Locations vulnerable to decreasing air quality include the immediate areas around mining and farm tilling, local population centers, and distant areas affected by long-range transportation of pollutants. Representative monitoring of air quality in the general area indicates that the existing air quality is well within acceptable standards.

The Environmental Protection Agency (EPA) General Conformity regulations require that an analysis (as well as a possible formal conformity determination) be performed for federally sponsored or funded actions in non-attainment areas and in designated maintenance areas when the total direct and indirect net air pollutant emissions (or their precursors) exceed specified levels. Since the GJFO is not within a non-attainment or a maintenance area, the Clean Air Act conformity regulations do not apply.

Environmental Effects

Alternative A – No Action

Direct and Indirect Effects

There would be no direct impacts to air quality associated with the No Action alternative. Indirect impacts would result from the lack of action and increased removal of vegetative cover, which would increase PM₁₀ emissions during wind events from the project area. Under the No Action alternative, the BLM would not conduct a gather and the existing population of wild horses would continue to grow approximately 13 percent annually. The BLM anticipates that the wild horse population could increase to approximately 802 animals over the next decade without any fertility

treatment. If on-site fertility treatments were maintained, growth would be anywhere from 531 to 579 animals. If gathers do not occur, range degradation, lack of water, and prolonged drought could contribute to reducing herd numbers. Under this scenario, the potential for the expanding horse herd to contribute towards degradation of land health conditions could leave soils exposed and more vulnerable to erosional processes which influence production of fugitive dust.

Cumulative Impacts Analysis

Cumulative impacts associated with the No Action alternative would result as pressures on the land and vegetation increase from wild horse grazing and wildlife grazing. Vegetation would continue to be utilized at high to severe rates, and land health would continue to decline, which would increase impacts to air quality from fugitive dust emissions. Impacts resulting from an expanding horse herd when combined with other past, present, and reasonably foreseeable land uses such as motorized recreation, mineral development, and natural phenomena such as wildfire and persistent drought, could contribute towards air quality degradation both locally and regionally as a result of increased dust production.

Alternative B – Proposed Action

Direct and Indirect Effects

Direct impacts associated with the Proposed Action would include temporary increases in fugitive dust production from the herd management area as the BLM, volunteers, and contractors install traps, haul water, fly a helicopter, and transport horses from the range to the adoption facilities. Impacts would generally be highly localized (roadside impacts), limited to periods of the gather, and would have no measurable impact on air quality away from driven access routes. Indirect impacts from the project would be related to the reduction in the number of wild horses on the range. The BLM expects that a reduction of wild horses would increase vegetative cover in the wild horse area. The increase in vegetative cover would stabilize soils reduce exposed soils and fugitive dust emissions, especially during high wind events. Under the Proposed Action the BLM would reduce the wild horse herd to the lower range of the AML of 90 to 150 horses. This reduction in herd size would persist over multiple years following the 2024 gather, which would have a long-term impact on fugitive dust emissions from the area.

Cumulative Impacts Analysis

Cumulative impacts to air quality associated with the Proposed Action are anticipated to be beneficial to air quality as the horse herd size would be reduced, which would maintain rangeland health conditions as well as herd health. These management objectives would operate within the context of past, present, and reasonably foreseeable uses in the herd management area. There would be a reduction in PM₁₀ dust transmission from the project area during high wind events due to a decrease in grazing and increase in vegetative cover.

Alternative C – No IUDs or Sex Ratio Adjustments

Direct and Indirect Effects

Impacts under Alternative C would be similar to those described under Alternative B. The BLM expects that if IUDs and sex ratio adjustments are not utilized then population growth would be elevated over the growth that would occur under Alternative B. These elevated impacts would be

related to higher population levels, which would remove or reduce vegetative cover that protects soils from wind events that elevate fugitive dust generated from the project area. Long-term impacts from persistent vegetation removal could be ecological site type conversion from deeper rooted perennial plants with larger canopy cover that hold soils in place and shelter soils better than invasive species that tend to increase in disturbed and heavily grazed areas.

Cumulative Impacts Analysis

Cumulative impacts under Alternative C would be greater than Alternative B, the Proposed Action, but less than Alternative A, the No Action alternative.

5.3.2 ISSUE 2: How would the wild horse gather impact erosive soils in the project area?

Affected Environment

The surface soils in the LBCWHR are deep, well drained, moderately slow permeable soils that formed in colluvium, residuum, and alluvium derived from sandstone and shale in the Mesa Verde formation. Soil types are characterized as sandy loam with variable amounts of clay (5 to 20% of the total volume). The proportion of clay in the soil increases in proximity to outcrops of shale. Much of the project area has steep to very steep slopes (15 to 30% grade) that are primarily composed of shale. The potential for erosional hazards in the project area are topsoil removal, sloughing, or collapse increases in areas with steep slopes and clay rich soils. A comprehensive description of all affected soils in the project area can be obtained online through the NRCS website: <http://soils.usda.gov/technical/classification/osd/index.html>.

Current soil problems in the LBCWHR are caused from topsoil erosion as well as soil compaction caused by the hoof action of horses; and both contribute to a lack of perennial plants that typically bind and protect soils. Past and present grazing by wild horses has reduced the perennial plant communities, and in problem areas, the perennial component has been replaced by annual invasive species. Since this area is managed as a horse area, it is not possible to change the season of grazing. Table 5.3.2-1 outlines the findings for Public Land Health Standard 1 from the 2006 BLM Land Health Assessment in the De Beque and Roan Creek area.

Table 5.3.2-1:

Finding for: Public Land Health Standard 1 (upland soils)		
Meeting	Meeting with Problems	Not Meeting
30,461 acres	7,158 acres	573 acres

Environmental Effects

Alternative A – No Action

Direct and Indirect Effects

Under the No Action alternative, the BLM would not conduct a wild horse gather; and therefore, no impacts to erosive soils resulting from gather operations would occur. The BLM would not be

able to reduce annual population growth to allow for the recovery of vegetation and reduce hoof action in erosive soils that would allow for the stabilization of soils. Overpopulation would continue to degrade vegetation and compact soils and the BLM would not achieve a thriving natural ecological balance (TNEB) for the LBCWHR by using the proposed methods in Alternative B or C.

Finding for Public Land Health Standard 1:

Under the No Action Alternative, the BLM anticipates that an overall reduction in soil health would occur and areas currently not meeting land health standard 1 (573 acres) would persist under this condition. Areas that the BLM determined are currently meeting with problems (7,158 acres) could be degraded to the point they no longer meet public land health standards. Areas currently meeting land health standard 1 (30,461 acres) could be degraded to a point they are meeting with problems or not meeting public land health standards for upland soils.

Cumulative Impacts Analysis

Through the 2006 BLM Land Health Assessment (LHA) of the De Beque and Roan Creek area, the BLM identified that soil related problems are related to erosion and a lack of perennial plants that bind and protect the soils. The LHA notes that these problems were directly related to drought as well as past livestock grazing and present grazing by horses. The LHA further explains that a combination of these factors has effectively reduced the perennial plant communities in the LBCWHR soils which have been replaced by annual invasive species that are less effective at stabilizing soils. BLM monitoring of the LBCWHR has shown that that year-round presence of wild horses does not provide the periodic rest needed by forage plants, especially perennial native species, to recover each season thus leaving horse removal as the primary tool to maintain proper utilization levels for sustaining healthy rangelands. Under the No Action Alternative, a herd reduction strategy would not be implemented, over grazing by horses would continue, ecologic diversity (lack of perennial plants and increase of invasive species) would be reduced, and erosion potential would be elevated. As a result, implementation of the No Action Alternative would contribute to degradation of soil health over the entire project area (38,192 acres).

Alternative B – Proposed Action

Direct and Indirect Effects

The Proposed Action includes potential bait sites (i.e., traps) that could be located within an 1,882-acre area identified as having the best conditions to apply the trap design features and mitigation measures inside the 38,400-acre project area. Trap sites would be located inside this 1,882-acre area and are the focus for short-term direct and indirect impacts caused by the Proposed Action. Short-term surface disturbance is expected to be associated with the construction and set-up of traps at bait sites and from the hoof action of the horses within these traps. The BLM estimates that each trap site would encompass approximately 0.5 acre. Soils would be exposed to concentrated hoof action that could increase soil compaction and the rate of soil erosion at the trap sites. The trap sites would initially be seeded and then allowed to reclaim naturally with time, and the success of reclamation would largely depend on the climatic conditions following seeding. The BLM and contractor would likely use previous trap locations that are disturbed areas with limited vegetation. Design features that include monitoring and reclamation activities would expedite recovery of trap sites. Long-term impacts from persistent vegetation removal could be erosion of

topsoil, less topsoil generation, and soil compaction in heavily grazed areas. The BLM would monitor sites for noxious weeds over the next several years and would assess sites to determine if reseeding is needed to expedite recovery after use of the area.

Finding for Public Land Health Standard 1:

The BLM would complete monitoring and ongoing evaluation of the herd management area over the next ten years would verify any changes to land health standard 1. The BLM anticipates that under the Proposed Action an overall increase in soil health would occur. Areas currently not meeting land health standard 1 (573 acres) would persist under this condition or improve, areas currently meeting with problems (7,158 acres) could be restored to the point they meet land health standard 1, and areas currently meeting land health standard 1 (30,461 acres) would continue to do so.

Cumulative Impacts Analysis

Through the 2006 BLM LHA of the De Beque and Roan Creek area, soil related problems were identified as being primarily related to erosion and a lack of perennial plants that bind and protect the soils. The BLM determined in the LHA that these problems were directly related to drought as well as past livestock grazing and present grazing by wild horses. The LHA further explains that a combination of these factors has effectively reduced the perennial plant communities in the erosive soils which have been replaced by annual invasive species that are less effective at stabilizing soils. Reductions in the wild horse herd size that improve perennial plant health would reduce annual invasive species spread and density, which would promote a natural lower frequency fire cycle. Increases in annual invasive species presence would increase fire return frequency and intensity, which would increase soil erosion and sediment transport from the project area. The BLM cannot change the season of grazing, because the project area is managed as a horse area. A reduction in herd size as outlined under the Proposed Action would help restore ecologic diversity and limit erosion potential by reducing grazing pressure from horses. As a result, implementation of the Proposed Action (reduced horse herd) would promote overall improvement to soil health, as the entire herd management area would benefit.

Design Features

The BLM manages the soils in the LBCWHR to maintain adequate soil infiltration and permeability by using methods that allow for the accumulation of soil moisture, minimizes surface runoff (Land Health Standard 1), and minimizes soil erosion (GJFO RMP, 2015). The following design features included in the Proposed Action would be used to meet the goals and objectives of the RMP to maintain soil productivity, preserve proper function and condition of upland soils, and to ensure that surface disturbances do not cause accelerated erosion on a watershed scale:

- S-2: When saturated soil conditions exist on access roads or location, or when road rutting becomes deeper than 3 inches, construction or activities should be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils, roads, and locations.
- Traps would not occur on soils that are sensitive, saline, or identified to have a risk of mass wasting.
- Disturbed areas would be seeded, and horse droppings would be scattered on the surface with chipped plant debris that would serve to discourage use of the area and ultimately

stabilize soils for seeds to germinate.

Alternative C – No IUD or Mare to Stallion Ratio Adjustments

Direct and Indirect Effects

The direct effects under Alternative C would be like those described under Alternative B (Proposed Action) for the gathering operations and would increase the rate of growth in the population over Alternative B, but less than Alternative A that has the highest potential for population growth. Alternative C includes the same potential bait sites (i.e., traps) as in Alternative B (Proposed Action) that could be located within an 1,882-acre area for bait sites in the 38,400-acre LBCWHR. Bait sites would be approximately 0.5 acres in size and would be located inside this 1,882-acre area. Short-term impacts to soils would be from surface disturbance due the construction and set-up of traps and from the hoof action of the horses within these traps. Increasing population levels would remove vegetative cover that protect soils from erosion that removes topsoil and creates fugitive dust. Long-term impacts from persistent vegetation removal could be erosion of topsoil, less topsoil generation, and soil compaction in heavily grazed areas. The BLM would monitor sites for noxious weeds over the next several years and would assess sites to determine if reseeding is needed to expedite recovery after use of the area.

Finding for Public Land Health Standard 1:

The finding for land health standard 1 for Alternative C would be similar Alternative B. Improvements to land health may not be as large as those under Alternative B because horse populations would be larger under this alternative.

Cumulative Impacts Analysis

Cumulative impacts under Alternative C would be like those described for Alternative B. Impacts would be slightly higher as a result of a larger wild horse population resulting from less effective population control techniques.

Design Features and Residual Impacts

The same design features that would be used for Alternative B would be applicable to Alternative C to meet the goals and objectives of the RMP to maintain soil productivity, preserve proper function and condition of upland soils, and to ensure that surface disturbances do not cause accelerated erosion on a watershed scale. Beneficial impacts from these design features would be the same as Alternative B.

5.3.3 ISSUE 3: How would the wild horse gather impact surface water quality, seeps, springs, and watershed health?

Affected Environment

All streams within the project area are situated in the Lower Colorado River Basin and are tributaries to the Colorado River between Grand Junction and De Beque, Colorado. All the streams are ephemeral or intermittent, flowing in response to summer convective storms and snowmelt. The Colorado Department of Public Health and Environment (Cothran) categorizes these streams as being in water quality stream segment 13a, which contains all tributaries to the Colorado River,

including wetlands, from a point immediately below the confluence of Roan Creek to the Colorado and Utah border (CCR, 2023). Stream segment 13a is not identified in Colorado's 303 (d) list of water-quality-limited stream segments that require monitoring and evaluation (CCR, 2023) meaning water quality standards are being met. The US Geological Survey (USGS) does not have a water monitor station posted in the LBCWHR and no water quality measurements were taken of stream segments as part of this analysis due to the lack of flowing water. The closest USGS monitor station is approximately 10 miles north of the project area at Dry Fork Creek at Upper Station near De Beque, Colorado, that only flows after heavy rains and winter snow melt. Water quality has not been measured in this stream since 2004

(https://waterdata.usgs.gov/nwis/wys_rpt/?site_no=09095300). Limited BLM data from past water sampling are available to represent the watershed within the herd management area from Conn Creek near the Town of De Beque indicate that the water is of poorer quality because of higher hardness, alkalinity, and total dissolved solids (TDS) levels between 350 to 650 milligrams per liter when flowing. Based on visual observations, high sediment loads are common of the flashy, high intensity, and localized storm events in this area. The BLM anticipates that streams within the project area are of similar quality. Water quality in these intermittent and ephemeral systems is primarily attributable to the natural environment and mineralogic composition of the rocks in contact with surface waters.

Numerous perennial springs are situated within the herd management area most of which are developed for wild horse and wildlife use and have BLM water rights to protect the sources. The water quality of these springs varies, but most tend to be high in total dissolved solids, which is indicative of their geologic setting.

Finding for Public Land Health Standard 5:

Currently streams within the LBCWHR are not identified on the State of Colorado's 303(d) list of impaired waters or monitoring and evaluation list (CCR, 2023). Therefore, water quality within the herd area is meeting land health standard 5. However, watershed health and water quality are intricately tied to soil health and areas where land health standard 1 for soils is not meeting or meeting with problems tend to highlight areas where water quality may also be a concern (see Table 5.3.2-1 in soils affected environment).

Environmental Effects

Alternative A – No Action

Direct and Indirect Effects

Under the No Action Alternative, no gather would occur. Therefore, no impacts associated with gather operations would result. Effects to water resources under this alternative are addressed under cumulative impacts.

Finding for Public Land Health Standard 5:

The BLM anticipates that any changes to land health standard 1 for soils would signify possible changes to land health standard 5, because soil health, water-quality, and watershed health are intricately related. Therefore, under the No Action Alternative, an overall reduction in soil health would occur as would a reduction in water quality and watershed health standard 5. Areas currently

not meeting land health standard 1 (573 acres) would persist under this condition and likely not meet land health standard 5 for water quality as well. Areas currently meeting land health standard 1 with problems (7,158 acres) could be degraded to the point they no longer meet land health standard 1 or 5. Areas currently meeting land health standard 1 (30,461 acres) could be degraded to a point they are meeting with problems or not meeting land health standard 5.

Cumulative Impacts Analysis

As outlined under cumulative effects section for soil resources under the Alternative A, drought, past, and present livestock grazing by horses has contributed to reduced soil stabilization and elevated erosion potential within the herd management area. As outlined under the affected environment, anthropogenic factors such as overgrazing by non-native species, such as wild horses (introduced species) can result in elevated sedimentation rates, which increase concentrations of total dissolved solids, elevate hardness and alkalinity, and reduce water quality in general. Under the Alternative A, the BLM would not implement a herd reduction strategy, over grazing by horses would continue, erosion potential would be elevated and water quality across the entire 38,400-acre range as well as downstream in the Colorado River would experience some level of degradation.

Alternative B – Proposed Action

Direct and Indirect Effects

The Proposed Action could directly result in surface disturbance, which would primarily be associated with construction of traps and hoof action within these holding areas. These short-term direct impacts could result in elevated sedimentation rates during the gather that could increase dissolved solids (i.e., TDS) resulting in increased water hardness, alkalinity, and could potentially degrade water quality in general. The Proposed Action estimates several traps could be utilized and for this analysis, it is estimated that each bait station would encompass approximately 0.5 acres each. Additional disturbances could elevate rates of sediment delivery to the area surface drainages potentially degrading water quality near traps. However, quantifying the impacts to the watershed associated with surface disturbance at traps would be difficult to distinguish from natural erosion conditions or other anthropogenic influences in the area (e.g., roads, OHV use, etc.).

Finding for Public Land Health Standard 5:

BLM monitoring and ongoing assessment of the herd management area would verify any changes to land health standard 5 over the next ten years. The BLM anticipates that any changes to land health standard 1 for soils would signify possible changes to land health standard 5, because soil health, water-quality, and watershed health are intricately related. Therefore, under the Proposed Action an overall increase in soil health would occur as would an increase in water quality and watershed health land health standard 5. Areas currently not meeting land health standard 1 (573 acres) would persist under these conditions or improve. Watershed health and a finding on land health standard 5 would likely mirror any improvements to soil health in these areas. Areas currently meeting land health standard 1 with problems (7,158 acres) could be restored to the point that they meet land health standard 1, similar improvements to water quality and land health standard 5 would be expected to follow. Areas currently meeting land health standard 1 (30,461 acres) would continue to do so and water quality standard 5 in these areas would also be meeting.

Cumulative Impacts Analysis

As outlined under cumulative effects section for soil resources under the Proposed Action, drought as well as past livestock grazing and present grazing by horses has contributed to reduced soil stabilization and elevated erosion potential within the herd management area (38,400 acres). As outlined under the affected environment, anthropogenic factors such as overgrazing by non-native species such as horses (introduced species) can result in elevated sedimentation rates, which increase concentrations of dissolved solids, elevate hardness and alkalinity, and reduce water quality in general. Under the Proposed Action, the BLM would implement a herd reduction strategy to reduce the horse herd to better fit the carrying capacity of the herd management area. Therefore, a reduction in herd size would help restore ecologic diversity, limit erosion potential and contribute towards water quality improvements, as grazing pressure from horses would be reduced. As a result, implementation of the Proposed Action (reduced horse herd) would promote overall improvement to water quality and watershed health over the entire herd management area as well as downstream in the Colorado River.

Design Features

For the BLM to meet the objective to manage public land activities to maintain or contribute to the long-term improvement of surface and ground water quality and to ensure streams on BLM lands are in geomorphic balance with the water and sediment being supplied by the watershed, the following design features would be used in Alternative B:

- **S-2:** When saturated soil conditions exist on access roads or location, or when road rutting becomes deeper than 3 inches, construction or activities should be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils, roads, and locations.

Alternative C – No IUD or Sex Ratio Adjustments

Direct and Indirect Effects

Alternative C could directly result in additional surface disturbance associated with the construction of traps and the hoof action of the horses within these holding areas that are estimated to encompass approximately one acre, with as much as ten acres that would be exposed to erosional processes. Additional disturbances could elevate rates of sediment delivery to area drainages that would degrade water quality near the traps. However, at the watershed scale quantification of impacts associated with surface disturbance at trap sites would be difficult to distinguish from natural conditions or other anthropogenic influences in the area (e.g., roads, OHV use, etc.).

Cumulative Impacts Analysis

Cumulative impacts would be similar Alternative B. Sedimentation rate and erosion would be higher due to the larger population of wild horses that would be present in the project area under Alternative C.

Design Features

The same design features that would be used for Alternative B would be applicable to Alternative C to manage public land activities to maintain or contribute to the long-term improvement of

surface and ground water quality and to ensure streams on BLM lands are in geomorphic balance with the water and sediment being supplied by the watershed. Beneficial impacts from these design features would be the same as Alternative B.

5.3.4 ISSUE 4: What would be the impacts to vegetative diversity, productivity, vigor, and invasive species from the proposed wild horse gather?

Affected Environment

The Little Book Cliffs Wild Horse Range consists primarily of three vegetative communities. Canyon bottoms in the lower elevation are desert shrub type surrounded by steep rocky pinyon-juniper canyon walls. Higher elevations consist of scattered sagebrush parks surrounded by pinyon-juniper hillsides and canyon walls.

The BLM has used managed wildfire, prescribed burning, and mechanical treatments to change sagebrush and pinyon and juniper dominant woodlands back to early seral stages to achieve a greater component of herbaceous grasses and forbs.

Some prescribed burn areas were not re-seeded but were used to decrease competition with shrubs, increase species diversity, increase vigor on perennial grasses and forbs already present, and to promote the establishment of perennial species from the existing seedbank. Other mechanical vegetation treatments included reseeding, to improve herbaceous cover, promote species diversity, increase soil cover, and reduce the potential establishment of noxious and invasive weeds.

In 2011, the BLM managed the lightning caused Cosgrove wildfire that burned approximately 1,700 acres to benefit wildlife and wild horses. The BLM aerially seeded the burned area in February of 2012. Seeding success was marginal due to the dry conditions in 2012 but monitoring has shown some improvement. The detailed Cosgrove Fire monitoring results is provided below in the Plot 5 and 6 summaries.

In 2020, the BLM seeded 170-acres of the LBCWHR following the Little Book Cliffs Fire that was started by a lightning strike. The BLM determined native perennial grass cover decreased in 2022 and 2023, following monitoring of the seeding project. The BLM found 8 of the seeded species while monitoring the quadrants (BLM 2023).

In the past ten years, areas treated in the 1960s and 70s within the North Soda, Indian Park, and Round Mountain areas, were re-treated with a hydro-ax or roller chopper to remove increasing brush and tree species. As part of these treatments, the BLM seeded the areas with a mixture of grass and forbs species. The vegetative re-treatments contributed to sustaining a portion of the forage base available for wild horses and wildlife species.

Noxious and invasive weeds have the potential to establish and spread if not addressed during the establishment phase in all disturbed areas including planned vegetation treatments, managed or unmanaged wildfire, or from drought conditions. Although some noxious weeds such as cheatgrass may provide early spring forage for wild horses and other ungulates, it is not a sustainable perennial forage base necessary for the longevity of healthy horses. A study in the LBCWHR documented wild horses eat and spread viable seeds of cheatgrass, which can germinate in their

feces (King et al. 2019), thereby spreading seed to other areas of the range potentially promoting new infestations of cheatgrass.

In the LBCWHR, invasive cheatgrass is a common occurrence along with other annual forbs such as *Alyssum* spp., and bur buttercup. A 2004 BLM’s inventory conducted of the LBCWHR initially revealed a few small infestations of long lived perennial noxious weeds (hoary cress and Russian knapweed) which are both on the Colorado Noxious Weed List, as B listed species, with direction “to stop the continued spread of the species”. The BLM continues periodic treatment of these noxious weed infestations. Table 5.3.4-1 portrays the percentage of noxious plant cover at randomized monitoring plots within the LBWHR; with the most recent points located in a burned and seeded area. Cheatgrass is the most prominent* invasive plant species accounted for in these cover percentages. Areas with the highest amounts of cheatgrass were burned areas and sagebrush flats, in comparison the areas with the least amount of cheatgrass were primarily pinyon-juniper woodland plots located higher in elevation.

Table 5.3.4-1 Percent Noxious Weeds at Plot

Plot ID	Percentage of Noxious Cover* at Plot
BookcliffSedMix-65 (2022)	18%
BookcliffSedMix-65 (2021)	9%
BookcliffSedMix-65 (2023)	25%
BookcliffSedMix-63 (2023)	39%
BookcliffSedMix-63 (2022)	21%
BookcliffSedMix-63 (2021)	1%
BookcliffSedMix-64 (2021)	0%
BookcliffSedMix-64 (2023)	1.3%
BookcliffSedMix-64 (2022)	0%
MtnSage-242 (2016)	39%
PJ-453 (2019)	3%
2020877201914B3 (2020)	0%
WyoSage-680 (2018)	3%

Over the last 24 years drought has been present at varying levels on the landscape. Drought conditions over the 24-year period shows approximately 17 years were at moderate to exceptional drought conditions, indicating drought occurred 70% of the time. Of those 17 years or 53% of the time, 9 years were classified as extreme to exceptional drought (see Graph 1 in Background section).

Table 5.3.4-2 Measured Precipitation

Year	Location	Average (Inches)	Actual (Inches)	Deviation from Normal (Inches)
2008	Grand Junction – NOAA	8.70	7.26	-1.44
	Corcoran Wash-BLM	17.17	15.77	-1.40
2009	Grand Junction – NOAA	8.70	7.79	-0.91
	Corcoran Wash – BLM	17.17	16.58	-0.58
2010	Grand Junction – NOAA	8.70	8.80	+0.10
	Corcoran Wash – BLM	17.17	14.50	-2.67
2011	Grand Junction – NOAA	8.70	9.76	+1.06
	Corcoran Wash – BLM	17.17	23.03	+5.86
2012	Grand Junction – NOAA	8.70	4.53	-4.18
	Corcoran Wash – BLM	17.17	11.13	-6.04
2013	Grand Junction – NOAA	9.4	12.43	+3.03
	Corcoran Wash – BLM	17.17	17.42	+.25
2014	Grand Junction – NOAA	9.4	11.96	+2.56
	Corcoran Wash – BLM	17.17	21.60	+4.43
2015	Grand Junction – NOAA	9.4	13.25	+3.85
	Corcoran Wash – BLM	17.17	13.60	-3.57
2016	Grand Junction – NOAA	9.4	8.83	-.57
	Corcoran Wash – BLM	17.17	16.33	-.84
2017	Grand Junction – NOAA	9.4	5.08	-4.32
	Corcoran Wash – BLM	17.17	14.27	-2.90
2018	Grand Junction – NOAA	9.1	4.65	-4.45
	Corcoran Wash – BLM	16.87	13.97	-2.90
2019	Grand Junction – NOAA	9.1	11.01	+1.91
	Corcoran Wash – BLM	16.87	17.82	+0.95
2020	Grand Junction – NOAA	9.1	5.53	-3.57
	Corcoran Wash – BLM	16.87	10.41	-6.46
2021	Grand Junction – NOAA	9.1	7.1	-2.00
	Corcoran Wash – BLM	No Data	No Data	No Data
2022	Grand Junction – NOAA	9.1	9.38	+0.28
	Corcoran Wash – BLM	No Data	No Data	No Data

Although the 2006 Land Health data depicts the area is meeting Land Health Standards for vegetation (Table 5.3.3-3), trend on a landscape level over the last 36 years has been moving in a downward direction. Drought conditions, heavy to severe utilization, and an increase in invasive and noxious species has led to a downward trend across the landscape in the LBCWHR and the data presented below is comprised of multiple lines of evidence that supports this statement.

BLM used the Rangeland Analysis Platform (RAP) to depict trend in the LBCWHR across a 36-year period. Data was uploaded into R and analyzed to determine statistical trend. The results below show a large change in perennial and annual herbaceous cover (Figure 5.3.3-1 a. and b.) along with perennial and annual herbaceous production (Figure 5.3.3-2 c.).

Perennial grass cover over a 36-year period shows a downward trend with a landscape level decline of 4% cover (figure a. 5.3.3-1). Figure a. 5.3.3-1 also shows a statistically significant (not significant environmental impact) increase $p=0.014$ in annual forbs and grass cover across the 36-year period with an estimate landscape change of 1%. Tree cover (figure b. 5.3.3-1) also has a statistically significant increase at $p=0.001$ with an estimated landscape increase of 6.5% across 36-years while shrub cover (figure b. 5.3.3-1) has statistically significantly decreased $p=0.001$ an estimated 4%.

Figure 5.3.3-1 (a and b) Vegetative Cover

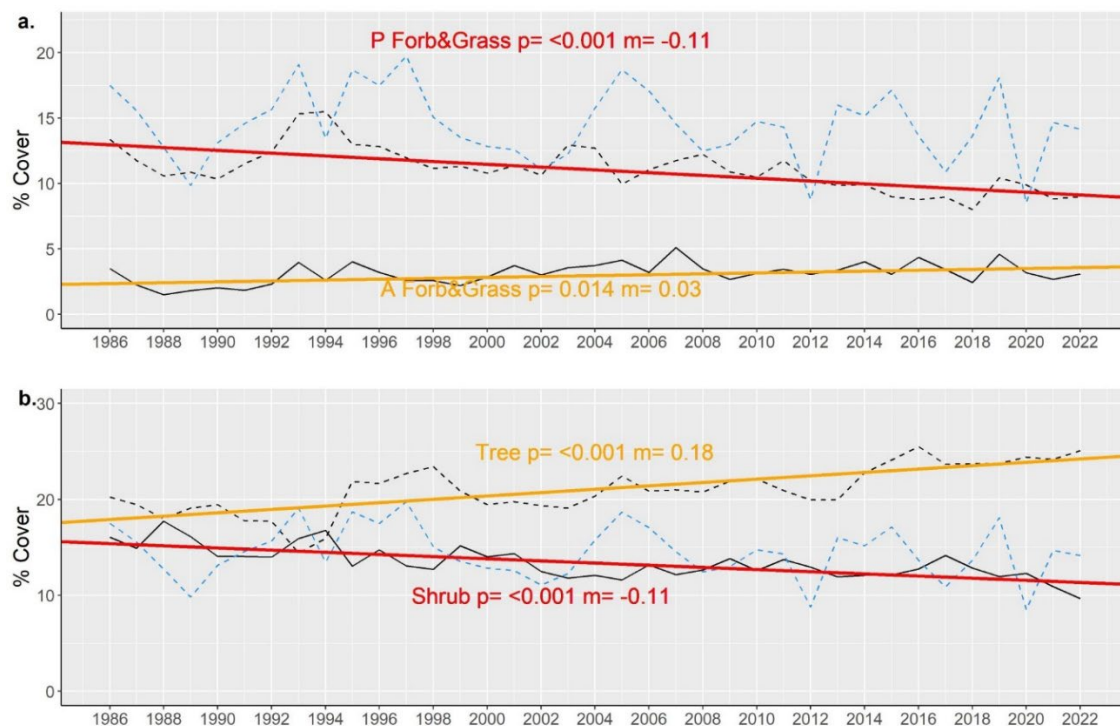
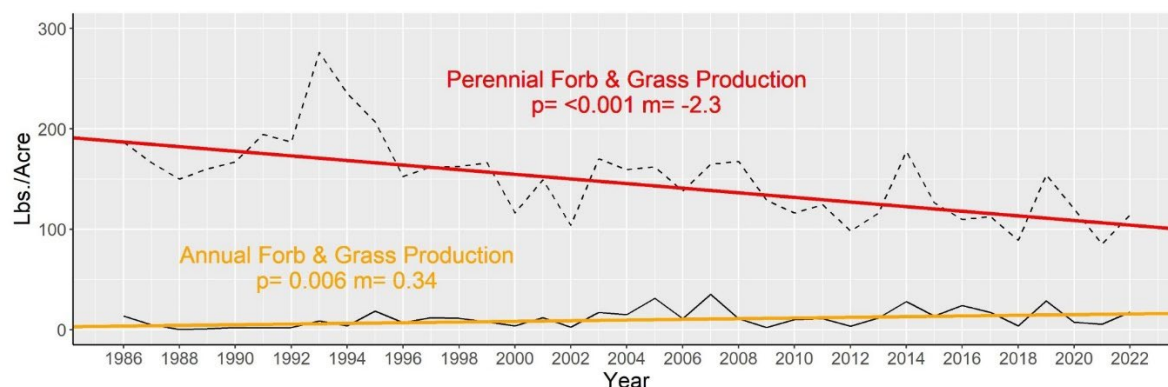


Figure 5.3.3-2 Vegetative Production



Perennial grass and forb production has decreased substantially over the 36-year timeframe $p=0.001$ with an estimated landscape level change 82.8 pounds per acre, while annual forbs and

grasses have seen a landscape level change of 12.24 pounds per acre with a statistical significance of $p=0.006$.

Finding for Public Land Health Standard 3:

Finding on the land health standard 3 for plant and animal communities (partial, see also wildlife, aquatic and wildlife, terrestrial): The BLM completed an LHA for the Little Book Cliffs Wild Horse Range in 2006 by an interdisciplinary team. The following table summarizes the results for Standard 3 in relation to plant communities.

Table 5.3.3-3 Land Health Standard 3 Summary

Evaluation of Standard Three: Plant Communities				
Area	Acres Achieving or Moving Towards Achieving	Acres Achieving with Problem Areas	Acres Not Achieving	Acres Not Meeting Standard 3 Due to: Horse grazing (1) Fire (2) Surface disturbance (3) Non-native Plants (4) and Drought (5)
Wild Horse Area (36,050) 308 unclassified	26,755	4,491	4,496	Lacking perennial diversity, cheatgrass, and grazing pressure

The BLM determined that approximately 4,496 acres were not achieving Standard 3 for plant communities. The majority of these acres were sagebrush parks that lacked diversity of perennial grasses and forbs and had an abundant presence of cheatgrass. Most of these parks are used extensively by the wild horses. The Proposed Action is to reduce the horse population to AML, which would reduce the grazing pressure on grass and sagebrush parks. Reduced pressure would allow for increase health and vigor of perennial plants and promote seed production to increase the presence of each species. Acres achieving with problem were sagebrush parks as well as pinyon and juniper communities that had decent perennial plant composition but were also occupied by a substantial amount of cheatgrass. Annual invasive weeds such as cheatgrass decrease the fire return interval, which causes higher frequency and intensity fires that have a detrimental effect on the perennial vegetation that is necessary to maintain and support the current AML levels. These areas would also benefit from reduced grazing pressure by wild horses to improve the vigor of perennial grasses which would increase seed production. Vegetative communities with healthy perennial plants are more resilient to disturbance and have a greater ability to compete with cheatgrass, which reduces the wildland fire risk and maintains a natural fire frequency and intensity for the ecological site.

Wildfires are frequent in the LBCWHR, with several fuel types present in the area including grass, grass and sagebrush, mountain shrub, and pinyon and juniper. These fuel types overlap in some areas creating mosaic communities of grass, sagebrush, and mountain shrub vegetation types and mountain shrub and pinyon juniper vegetation types. Cheatgrass and other annual invasive species are present in all these fuel types. Even though horses eat cheatgrass it is not ideal forage and is only palatable for short periods during the spring and fall depending upon winter and monsoonal

moisture. Cheatgrass tends to increase in areas with heavy grazing. Cheatgrass has the potential to create large fuel loads since it dries out by early summer (Colorado State University Extension [CSUE],n.d.).

Grass fuel types are limited on the landscape and are associated with areas that have undergone vegetation treatments and been burned from naturally occurring wildfires. Grassland areas are associated with a more gentle and flat terrain. These areas are frequented by wild horses and tend to be heavily grazed with an abundance of cheatgrass and other annual invasive species. The fire regime in grass fuel types is typically characterized by frequent (10-to-20-year interval), low intensity fires that reduce encroaching woody species, such as sagebrush, pinyon, and juniper, and subsequently maintain openings dominated by grasses and forbs.

The sagebrush/grass fuel type is common on the landscape and can be found in small to medium size openings. Some of these areas have been affected by wildfire in the past while other have not. Cheatgrass and other invasive annual species are common in these areas. The fire regime in the sagebrush/grass fuel type is typically characterized by infrequent (25-to-100-year interval), higher intensity fires that burn through the sagebrush and grass, removing the sagebrush from the area and creating large patches of grasses and forbs on the landscape. These areas are frequented by horses and make up a critical portion of the forage needed to maintain current AML.

The mountain shrub fuel type is common on the landscape and can be found in small to medium sizes mostly on north facing slopes where there is higher soil moistures and cooler temperatures. Cheatgrass and other invasive annual species are not as abundant on these vegetation types. The fire regime in the mountain shrub fuel type is characterized by infrequent (50-to-120-year interval), high intensity crown fires that remove the above ground portion of the shrubs and create small to large size openings that are initially dominated by grasses and forbs, but quickly succeed back to mountain shrub species that rapidly resprout following disturbance. These areas are utilized by horses but not as extensively as the above two and are used primarily as a pass through to other areas of the range.

The pinyon juniper fuel type is the most abundant fuel type within the LBCWHR. This vegetation type is scattered along higher ridges, on north and east facing slopes, and is the primary fuel type located in the wilderness study area portion of the LBCWHR. The fire regime in the pinyon and juniper fuel type is characterized by long return (150-to-300 year or more interval), high intensity fires that burn with high severity through the canopies, removing the pinyon, juniper, and any shrub components and leaving small to large size openings dominated by grasses and forbs and limited resprouting shrubs that may have been present in the understory. Horses use these areas for shade and when herbaceous vegetation is present will utilize the area for grazing.

Cheatgrass and other invasive annual species are present in all fuel types mentioned. It is well documented in literature cheatgrass only provides forage for about 3 to 6 weeks of the year in early spring and potentially during limited fall green up. It is also well documented that cheatgrass can shorten fire intervals which can be detrimental to native vegetation especially non-sprouting shrubs and perennial grasses already compromised by heavy utilization rates (see rangeland monitoring section below). Cheatgrass and other invasive annual species such as *Alyssum spp.* have an adaptive advantage that enables them to take advantage of early spring moisture prior to most

native perennial grasses and forbs germinating or coming out of dormancy, which compounds impacts related to nutrient and water availability, heavy grazing utilization, as well as potential drought and wildfire on desirable perennial species. These compounding issues have an enormous effect on the health, vigor, and viability of native perennial species, which are key to maintaining current AML levels.

The Proposed Action supports the opportunity for healthier perennial plant communities which would be in compliance with Land Health Standard 3. Land Health Assessment documents are available at the GJFO.

Rangeland Monitoring

The following information is a summary of trend studies in the Little Book Cliffs Wild Horse Range. Studies are located in five areas of the range: Coal Canyon, Monument Rock, Indian Park, Round Mountain, and North Soda. Trend studies include a combination of a photo point, nested frequency transect, apparent trend and utilization. Changes in statistical significance that are described indicate changes between conditions and do not indicate environmental significance related to impacts.

Coal Canyon: Plot 13 (outside enclosure); Frequency data from 1986, 1996, 2001, 2006, 2011, and 2017 showed the primary grass species remained constant from 1986 to 2017 with fluctuations (slight increases and decreases) across time. Shadscale saltbush showed a measurable decrease through the period. Apparent trend was static in 2001, 2006, and 2017.

In plot 14 (inside enclosure); Frequency data from 1986, 1996, 2001, and 2006 showed a steady decrease in the primary grass species including galleta grass, salina wildrye, and sandberg bluegrass. Shadscale saltbush also showed a slight decrease. Apparent Trend was upward in 1996 and 2001 and static in 2010 and 2017.

Summary for Coal Canyon area: The BLM found rangeland conditions to be stable on the outside of the enclosure for the primary grass species. Shadscale has decreased. Apparent trend is stable. The BLM noted wild horse use in the enclosure in 2006 due to a break in the fence.

Monument Rock: Plot 1: This photo point shows that grass and sagebrush cover has remained stable from 1984 to 2017. Apparent Trend was static. Plot 7 (Felix Flats): Apparent Trend was static in 1996 and 2001 and downward in 1991, 2006, and 2017. Frequency data from 1986, 1991, 1996, 2001, 2006, and 2017 at Plot 7 showed a statistically significant decrease in needle and thread grass and galleta grass. The BLM determined that bluegrass had a statistically significant increase, while sagebrush dominates this site and remained constant at a high frequency.

Plot 11 (outside the enclosure): Frequency data from 1986, 1991, 1996, 2001, 2006, 2010, and 2017 showed a statistically significant decrease in wheatgrass and needle and thread grass, slight decrease in junegrass and static conditions in bluegrass, squirrel tail, and sagebrush. Sagebrush dominates the site and remains constant. Apparent Trend was upward in 1996, static in 2001 and downward in 2006, 2010, and 2017.

Plot 12 (inside the enclosure): Also showed a substantial decrease in wheatgrass and needle and thread grass, a decrease in squirrel tail, slight increase in bluegrass and static conditions in junegrass and sagebrush. Apparent Trend was upward in 1996 and 2001 and static in 2006, 2010, and 2017.

Summary for Monument Rock area: The frequency of the primary forage species such as wheatgrass as well as needle and thread grass are declining in the area both inside and outside the enclosures within Felix Flats. Sagebrush cover is slightly lower inside the enclosure. Overall, sagebrush is dominating these areas and reducing the grass component, thus decreasing the available forage for wild horses.

Indian Park: Plot IP6: The BLM mechanically treated the area in 2005. BLM frequency data from 1986, 1991, 1996, 2001, 2004, 2006, and 2010 showed substantial decreases in bluegrass, wheatgrass, and junegrass. There was an increase in these species between 2006 and 2010 most likely due to the treatment. Sagebrush remained static until the treatment, which caused a substantial decrease but is increasing toward pretreatment levels. Apparent trend was upward in 1996 and static in 1991, 2006, and 2010. Plot 6T is a frequency transect that was established in 2006 to better represent the treatment area. From 2006 to 2017 sagebrush has shown an increase, June grass decreased from 2010 to 2016, and bluegrass and wheatgrass substantially increased. Apparent trend was static in 2006 and 2010 and upward in 2017.

Plot IP5: This photo point is in an area with the first recorded burn in 2000, and that the BLM treated in 2005. Following the treatments there was a decrease in tree and brush species and an increase in grass species given the reseeding as part of the 2005 treatment. Apparent trend was upward in 2001 and 2017 and static in 2006 and 2010. Species diversity was sufficient, but vigor was low due to heavy utilization.

Summary for Indian Park area: The area was showing a static to steady decline in forage species until the treatment in 2005. Conditions in forage species increased following the treatment due to the reseeding effort and associated decrease in sagebrush. Due to the increase in forage species these areas wild horses primarily use these areas.

Round Mountain: Plot 3: A photo point within a prescribed burn conducted in 2000. Apparent trend was up in 1997, static in 2001, 2010, 2017, and downward in 2006. Even though the fire removed tree and brush species, grass species diversity remained low. Cheatgrass increased during this period.

Plot 4: A photo point in a burned area. Conditions are similar to Plot 3. Apparent trend was static in 2001, 2004 2010, 2017, and down in 2006. The BLM noted low plant biodiversity.

Plot 5 (Darting Field): This photo point is within the 2000 prescribed burn, and the 2011 Cosgrove Fire perimeter. Following the burn there was a substantial decrease in sagebrush and slight increase in grass species including cheatgrass. Apparent Trend was up in 1997, static in 2001, 2010, 2013, and 2017, and downward in 2006 and 2012. The BLM rated species diversity is low to moderate.

Plot 6: This frequency transect was also within prescribed burn area and the 2011 Cosgrove Fire burn perimeter. Frequency data from 1989, 1997, 2001, 2006, 2010, and 2017 showed a decrease in needle and thread grass until 2010, then an increase to 2017. Agropyron has shown a steady increase from 2006 to 2017. Sagebrush was static until removed by a prescribed fire. Sand dropseed frequency remained low and static. Apparent trend was upward in 1997 and 2001, static in 2006, down in 2010, and static in 2017. The BLM determined that species diversity and vigor was low with abundant cheatgrass. The BLM also noted that seedling establishment was lacking and moderate to high horse use was occurring.

Summary of Round Mountain area: The burned areas resulted in decreased tree and shrub species, some increase in perennial grass species, as well as an increase in cheatgrass. Because the area was not reseeded following the prescribed burn species diversity remained low. These areas have seen heavy use by wild horses following the burn.

North Soda: Plot 4: A photo point within the area mechanically treated and seeded in 2003. The treatment resulted in a decrease in tree and shrub species and a slight increase in grass species. Apparent Trend was static in 2001, 2006, 2010, 2012, and 2017. The BLM noted low vigor in this area.

Plot 8A: This frequency transect is located in an area that was mechanically treated and seeded in 2003. Frequency data from 1986, 1991, 1996, 2001, 2006, 2010, 2012, and 2017 showed: bluegrass remaining constant until substantial decrease in 2012 then substantial increase in 2017; junegrass has slowly declined since 2001 and wheatgrass has slightly increased. Sagebrush was on a gradual increase until the treatment caused a substantial decrease but has rebounded since. Apparent trend was upward in 1996 and static in 2001, 2006, 2010, and downward in 2012.

Plot 15 (outside exclosure): Frequency data from 1986, 1991, 1996, 2001, 2006, 2010, and 2017 showed an overall decrease in grass species (bluegrass, blue grama, needle and thread, and wheatgrass) up to 2010, then slight increase to 2017. Most species had increased slightly up until 2001 then decreased. Sagebrush remained static. Apparent trend was upward in 1996 and static in 2001, 2006, 2010, and 2017. The BLM noted low diversity and moderate vigor.

Plot 16 (inside exclosure): Frequency data from 1986, 1991, 1996, 2001, 2006, 2010, and 2017 showed a slight decrease in wheatgrass as well as needle and thread grass, a slight increase in junegrass, and static conditions for sagebrush and bluegrass. There was more sagebrush and needle and threadgrass inside the exclosure than outside, while western wheatgrass is higher outside the exclosure. Apparent trend was upward in 1996 and 2001, and static in 2006, 2010, and 2017. Adequate vigor and increased diversity were noted inside the exclosure.

Summary of North Soda area: Conditions appear slightly better inside the exclosure than outside indicating the wild horse use is having some impact. Treatments in the area have successfully removed tree and brush species, and seeding efforts have increased grass species, resulting in an increase in the forage for wild horses. The wild horses primarily use areas where the BLM has completed vegetation treatments. The BLM found high utilization in these areas over the past 2 years.

Vegetation Trend Summary for LBWHR

The BLM's overall trend studies indicate that conditions on the range are declining or downward, with some cases of static and upward trends. Upward trends are generally a result of the recent treatments where seeding was a component of the treatment. The areas with a downward trend are those that have a high component of tree or brush species and a declining grass component. A reduction in the amount of perennial grass has decreased the forage base in these areas, resulting in overuse of the grasses. These trends result from a combination of grazing by horses and drought conditions.

Utilization comparisons between inside and outside the enclosures were dramatic, illustrating the heavy to severe grazing was occurring from the wild horses. Table 5.3.3-4 through 5.3.3-6. Comparisons in the vegetation data inside and outside the enclosures indicate that drought and wild horse grazing are contributing factors to downward trends.

Utilization

Utilization data collected by the BLM in 2015, 2016, and 2017 was completed using the key forage plant method. This method is an ocular reconnaissance study designed to capture forage utilization levels. This method employs the use of range utilization cages if available, exclosures, or other ungrazed areas to assist the observer's ability to determine what growth occurred in relation to exclusion of grazing. These areas help prevent observation bias that could occur from year-to-year variability in weather patterns that directly correlate to plant production and phenology. When using this method, a random directional transect is used at a study site and data is collected at several points. A classification rating is assigned and recorded for each point that is based upon six classes. After the data is collected the mid-point of each use class is multiplied by the frequency of points within that use class by forage species. All values are then summed and divided by the total number of points to equal the utilization level. Utilization studies were conducted at study sites described above under rangeland monitoring or other key horse use areas. The six categories of utilization levels with the percentages in parenthesis are severe (81-100), heavy (61-80), moderate (41-60), light (21-40), and slight (0-20). A summary of utilization studies from 2010, 2011, and 2012 is provided below (see Map 3 for site locations).

The BLM observed heavy to severe utilization levels in most of the LBCWHR during the 2016 and 2017 evaluations, which are above the utilization objectives identified in the HMAP. Utilization levels in 2015 were within the acceptable range, primarily due to precipitation being substantially above normal. Continued heavy and severe utilization of plants will lead to a decline in plant vigor and eventually death of a plant, resulting in a reduction in the available forage base for wild horses. Observations in the spring of 2013 indicated that plants were heavily or severely grazed in 2012, with less vigor than ungrazed plants. Continued heavy grazing will result in the loss of these forage plants.

Table 5.3.3-4 Utilization Summary 2015

Date Collected	Utilization Level	Location
September 25, 2015	Heavy	Indian Park
September 25, 2015	Heavy	Cosgrove Ridge
September 25, 2015	Heavy	Big Ed's Field
September 25, 2015	Heavy	Darting Field

September 25, 2015	Moderate	Main and Cottonwood Canyon
September 25, 2015	Moderate	End of Round Mountain Road
October 9, 2015	Heavy	Monument Rock – Near Exclosures
October 9, 2015	Heavy	Felix Flat
September 26, 2015	Moderate	North Soda – Entrance Fields
September 26, 2015	Heavy	North Soda – Treated Fields towards cabin
September 26, 2015	Heavy	North Soda – Big Field
September 26, 2015	Moderate	North Soda – Far Side

Table 5.3.3-5 Utilization Summary 2016

Date Collected	Utilization Level	Location
October 18, 2016	Heavy	Indian Park
October 18, 2016	Heavy	Cosgrove Ridge
October 18, 2016	Moderate	Big Ed's Field
October 18, 2016	Heavy	Darting Field
October 18, 2016	Heavy	Main and Cottonwood Canyon
October 18, 2016	Moderate	End of Round Mountain Road
October 18, 2016	Heavy	Monument Rock – Near Exclosures
October 18, 2016	Heavy	Felix Flat
October 18, 2016	Heavy	North Soda – Entrance Fields
October 18, 2016	Heavy	North Soda – Treated Fields towards cabin
October 18, 2016	Heavy	North Soda – Big Field
October 18, 2016	Moderate	North Soda – Far Side

Table 5.3.3-6 Utilization Summary 2017

Date Collected	Utilization Level	Location
October 24, 2017	Heavy	Indian Park
October 24, 2017	Heavy	Cosgrove Ridge
October 24, 2017	Heavy	Big Ed's Field
October 24, 2017	Severe	Darting Field
October 24, 2017	Heavy	Main and Cottonwood Canyon
October 24, 2017	Heavy	End of Round Mountain Road

October 24, 2017	Heavy	Monument Rock – Near Exclosures
October 24, 2017	Heavy	Felix Flat
October 24, 2017	Heavy	North Soda – Entrance Fields
October 24, 2017	Severe	North Soda – Treated Fields towards cabin
October 24, 2017	Severe	North Soda – Big Field
October 24, 2017	Moderate	North Soda – Far Side

Environmental Effects

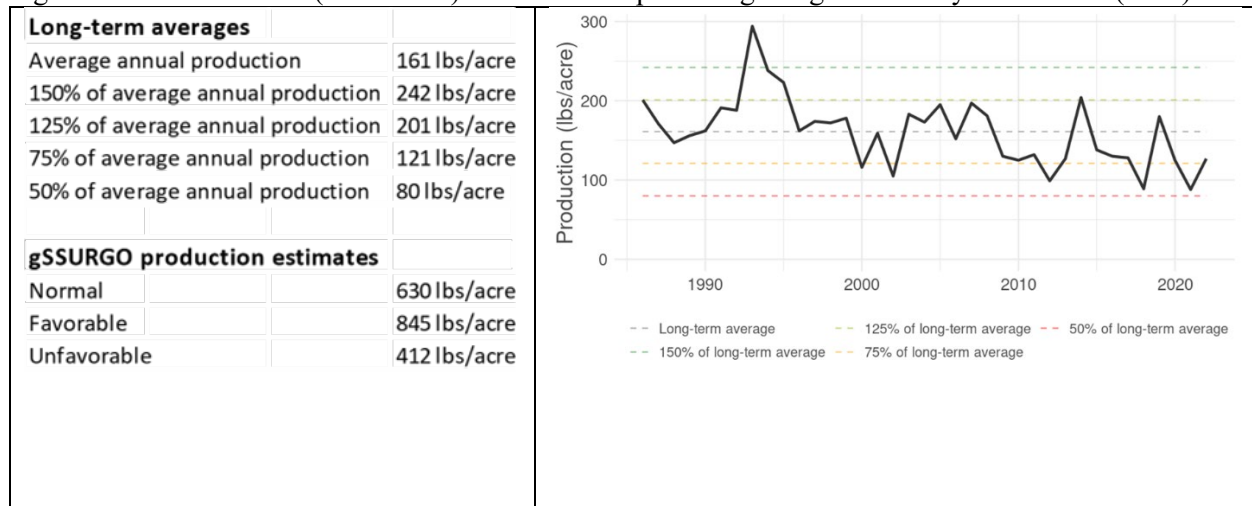
Alternative A – No Action

Direct and Indirect Effects

Under the No Action Alternative, the wild horse population would continue to rise resulting in a continued downward trend in vegetation health across the landscape, eventually compromising the forage base relied on for the continuation of healthy horses and the landscape meeting land health standards and thriving natural community.

The BLM expects the historic annual perennial production for the LBCWHR to be approximately 630 pounds per acre of forage for a normal year precipitation as shown in the Gridded Soil Survey Geographic Database (gSSURGO). However, the data in Figure 5.4.3-4 shows from 1990 through 2022 the area is not producing at this level but producing an average production level of 161 pounds per acre. This, in turn, will not support horse levels above the current AML range of 90 to 150 horses.

Figure 5.4.3-4. Historical (1986-2022) Production Report using Rangeland Analysis Platform (RAP) Data



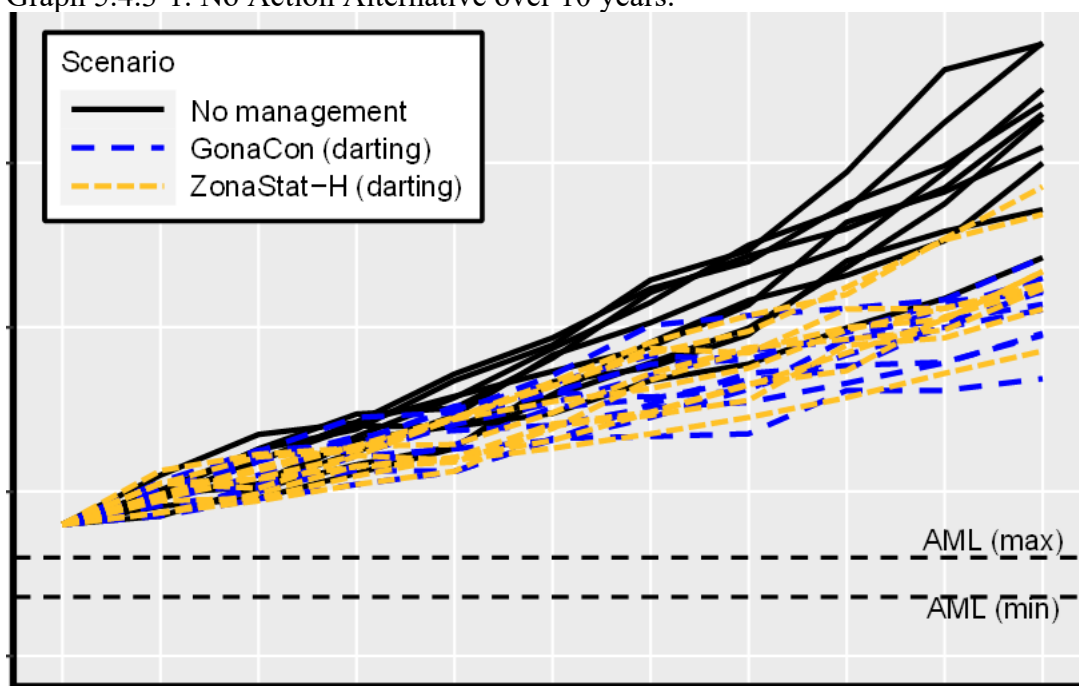
The BLM estimates without gathers and with the current level of fertility control, the wild horse population would be approximately 531 to 579 horses over the next decade (Table 5.4.3-7). For full Pop Equus results see Appendix C.

Table 5.4.3- Population increase over a 10-year period.

Alternative	Final population size	Overall mean population size	AML probability
No management	802 (622-933)	460 (396-518)	0.00
GonaCon (darting)	531 (437-599)	369 (319-414)	0.00
ZonaStat-H (darting)	579 (478-705)	378 (332-426)	0.00

A graph of population size across time can be used to visualize effects of management alternatives on population size. Different colored lines indicate management alternatives simulated by the user; for each alternative, individual lines are different simulation replicates, that vary due to random chance. Dashed horizontal black lines indicate the minimum and maximum target population size range (i.e., AML).

Graph 5.4.3-1. No Action Alternative over 10 years.



The continuation of horses at higher AML levels above 90 to 150 head will have a negative effect on horse health, land health, and thriving ecological balance. Horse populations above AML would contribute to unacceptable utilization levels eventually contributing to the loss of native perennial plants and a reduction in forage base for wild horses and wildlife species. The continuation of the fertility control program would reduce the population growth to around 13% per year but as noted above, over a 10-year period horse number would increase to 4 times AML.

With the increase in horse numbers, concentrated wild horse use in parts of the LBCWHR would adversely impact soils and vegetation health under current use patterns. As native plant health deteriorates and perennial plants are lost, invasive species would increase as shown in Figure a. 5.4.3-1 With the increase in invasive species a decrease in horse health is expected due to the limited time invasive plants, especially cheatgrass, are available on the range as nutritional forage. In addition, an increase in invasive plant species could lead to a change in fire regime causing increased fire intervals, fire intensity, horse burn overs, and the potential need to remove horses

from the range due to the lack of forage and rehabilitation efforts. The Pine Gulch fire adjacent to the wild horse area, consumed 139,000 acres and is an example of extreme fire behavior that resulted in the reduction and removal of livestock grazing for 2 years.

The No Action Alternative would result in an increase in the amount of the LBCWHR that is not meeting land health standards 1 and 3 due to the loss of desirable vegetation, an increase in invasive and noxious weed species, and increased impacts to soils.

Cumulative Impacts Analysis

A wild horse population above the AML range of 90 to 150 would continue to contribute an overall downward trend of the landscape Figure 5.4.3-2 A and B. Heavy to severe utilization of forage plants would continue to contribute to the loss of desirable perennial plants and an increase undesirable invasive and noxious weed species (Table 5.3.4-1). These impacts have the potential to alter fire regimes by potentially increasing the fire interval. In addition to the above impacts to Land Health Standard 3, Land Health Standard 1 Soils, could also be evident with an increase in erosion due to the lack of water infiltration, increase in rills or the lack of varying root depths. These impacts collectively reduce the perennial forage and the feed necessary for sustainable healthy horses over time.

Alternative B – Proposed Action

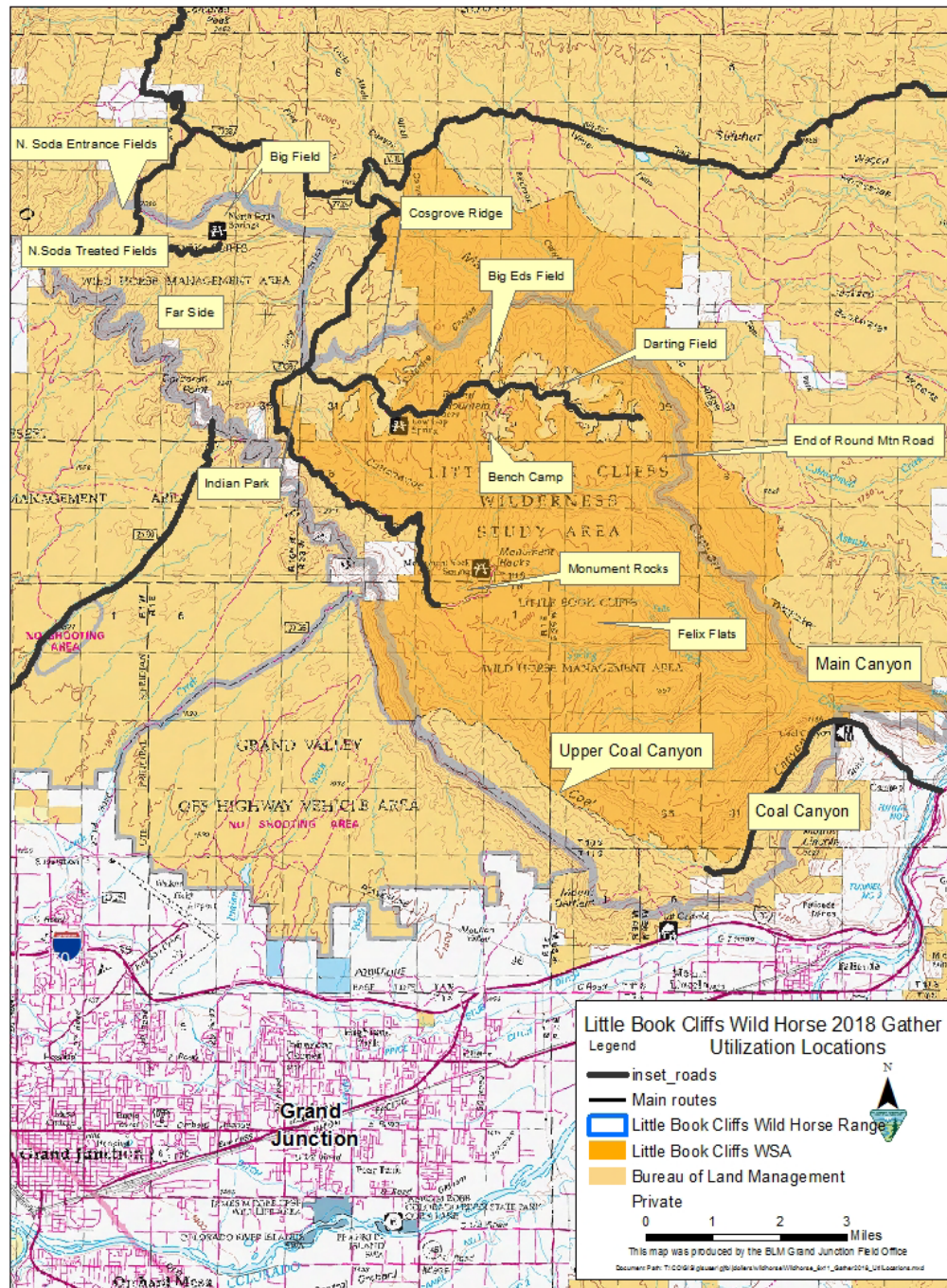
Direct and Indirect Effects

The BLM's proposal to remove excess wild horses and move the population towards the lower end of AML would reduce a portion of the impacts caused from overgrazing on perennial plant communities that are necessary for the sustainability of the wild horse herd. The BLM's goal is to achieve acceptable utilization levels, as stated in the Little Book Cliffs Wild Horse Management Plan for summer utilization rates of 30% from April 16th to September 15th and winter utilization rates of 60% from September 16th to April 14th key perennial grass species and increase the distribution of horses across the range. An increase in the vigor of desirable perennial plants would help reduce wildfire risks, maintain and strive to improve the current forage base (figure 5.4.3-4), and better support healthy horses and rangelands meeting land health standards (Table 5.4.3-3). Drought (Figure 5.3.4-1) would still have a negative effect on the range. Managing toward the lower end of AML would help to address drought influences, reduced vigor of perennial species, maintain seedhead production, and overall plant and soil health. The Proposed Action would be in compliance with the Wild Free-Roaming Horses and Burros Act, Colorado Standards for Rangeland Health, and the Grand Junction Resource Management Plan (GJ RMP, 2015) objectives.

With implementation of the Proposed Action, there would be small impacts to vegetation and soils that include disturbance of native vegetation immediately in and around temporary trap sites and temporary holding facilities. Impacts would be by vehicle traffic, hoof action of penned horses, and would be locally severe in the immediate vicinity of the corrals or holding facilities. Generally, the activity sites would be small less than one acre in size. Soil compaction, localized wind erosion, and destruction of biological soil crusts, where present, would occur at the trap sites. Since most trap sites and holding facilities would be in areas previously disturbed any impacts would remain site-specific and isolated in nature. In addition, most trap sites would be selected for easy access

by transportation vehicles, logistical support, and would generally be adjacent to or on roads, pullouts, water developments, or other flat spots that were previously disturbed. Vehicles used in the horse gather would also cause soil compaction and increased erosion in a small area. By adhering to the CAWP Standards for Wild Horse Gathers (Appendix D), adverse impacts to soils would be minimized.

Map 5.4.3-1: Utilization Locations



There should be very little effect from a weed perspective, regardless of the method used to gather horses (bait and water trap or helicopter drive, or both). The most likely way to introduce weeds into the trap sites is through the use contaminated feed if it is used as bait. Design features included in the Proposed Action requiring the BLM to only use of certified weed free hay or feed for bait sites and certified weed free seed for reclamation activities would mitigate this concern. In addition, monitoring of sites would occur to reduce the chance of establishing new noxious weeds infestations.

Cumulative Impacts Analysis

The BLM's proposed removal of excess horses would promote acceptable utilization levels, of 50% or less, on grazed forage plants. Acceptable utilization levels result in healthy, vigorous, productive plants, which would contribute toward maintaining and improving desirable vegetative communities. Healthy ecologically sound plant communities are more resilient to noxious and invasive weed infestations, are able to withstand drought and wildfire more effectively, and overall protect the ecological integrity of an area.

Alternative C – No IUD or Sex Ratio Adjustments

Direct and Indirect Effects

Under Alternative C, no IUD or mare to stallion ratio adjustments would occur. This would have similar effects to those described in Alternative A, although at a slower rate. In the Proposed Action removal of excess horses would immediately minimize the negative effects related to degradation of land health from the growing horse population by removing excess horses. However, under Alternative A and Alternative C the higher the number of mares in comparison to the number of stallions would contribute to a higher number of foals, and consequently a higher number of breeding females across time.

Use of IUDs would be similar to the use of other fertility control methods such as GonaCon (approximately 3 year), or PZP (1 year) only the administration of the IUD is a more in-depth, precise process that must be completed by a veterinarian at a facility where it is determined the mare is not pregnant, and is observed for 7 or more days to verify they are not showing any signs of discomfort prior to being returned to the LBCWHR. Fertility control from the use of IUDs could last from 2 to 5 years and with a top end AML of 150 it is unlikely for use in the LBCWHR.

The increase in additional foal numbers under this alternative continues to increase the number of fillies and mares on the range amplifying the number of horses, which has a direct impact on rangeland health and carrying capacity.

Cumulative Impacts Analysis

Over utilization of forage plants results in the loss of desirable plants and an increase in undesirable plants. The impacts results in negative impacts to soil resources as well as wildlife and watershed functions. In the long-term the condition of the range may deteriorate and there may not be adequate vegetation to support the horse population. Over the very long term, there is the potential of noxious weeds moving into the stressed ecosystem if the BLM allows the herd size to remain

over the AML or at the maximum level. More frequent gathers would be necessary to maintain healthy rangeland for healthy horses.

5.3.5 ISSUE 5: How would Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch be impacted by the wild horse gather?

Affected Environment

The BLM is aware of occurrences of the threatened Colorado hookless cactus (*Sclerocactus glaucus*), BLM sensitive species narrow-stem gilia, and the BLM sensitive Naturita milkvetch in Coal Canyon, Main Canyon, and near the Winter Flats holding facility. BLM utilized previously completed vegetation survey results and the Colorado Natural Heritage Program's (CNHP) *Sclerocactus glaucus* suitable habitat model to assist in determining potential areas of concern within the project area. The model is not a substitute for clearance surveys but indicates areas of highest likelihood of the presence of suitable habitat for *Sclerocactus glaucus* (Colorado hookless cactus). The model indicates that Coal Canyon and Main Canyon have a moderate to high probability of being suitable habitat for Colorado hookless cactus. Colorado hookless cactus has not been previously documented in Coal Canyon, although a BioBlitz in 2014, inventoried portions of Coal and Main Canyons. In 2018, a vegetation survey was completed in Main Canyon for an unrelated project. This survey found that Colorado hookless cactus and narrow-stem gilia are present in Main Canyon. In 2016, a vegetation survey was completed near the proposed Winter Flats holding facility where Naturita milkvetch was found to be present. The CNHP *Sclerocactus glaucus* model showed that the project area consists of 18,909 acres of potentially suitable habitat within the LBCWHR. Of those 18,909 acres of potentially suitable habitat, 235 acres overlap with the proposed project area in Coal Canyon and Main Canyon.

During the spring of 2024 the BLM completed biological surveys in Main Canyon. Surveys documented numerous cacti on the west side of the canyon. Results were used to determine wing fence locations and project design features to minimize impacts to rare plants.

Finding for Public Land Health Standard 4

The Land Health Assessment for the LBCWHR was completed in 2006. The Public Land Health Status 4 for Special Status Species was found to be "meeting." It is important to note that in 2006 it was not known that the range of the Colorado hookless cactus included Main or Coal Canyons.

Environmental Effects

Alternative A – No Action

Direct and Indirect Effects

This alternative would not result in direct effects to Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch from roundup activities. Indirect impacts would result from the lack of action and increased foraging activities, which would increase habitat degradation and potential of trampling of individual rare plants in the project area. Under the No Action alternative, the BLM would not conduct a gather and the existing population of wild horses would continue to grow approximately 13 percent annually. The BLM anticipates the wild horse population could increase to approximately 802 animals over the next decade without any fertility treatment; if on-range

fertility treatments were maintained, growth would be anywhere from 531 to 579 animals. Under this scenario, the potential for the expanding horse herd to contribute towards degradation of Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch habitats and increased numbers of trampled individuals would be expected.

Finding for Public Land Health Standard 4

The No Action alternative would likely result in land health across the wild horse range decreasing into the “not meeting” category, negatively impacting threatened, and sensitive species habitat. This decrease to “not meeting” is anticipated to occur due to the potential for an increase in the wild horse herd size. Increased numbers of horses in the LBCWHR will lead to further habitat degradation and high to severe rates of utilization levels on vegetation in the area.

Cumulative Impacts Analysis

Cumulative impacts associated with the No Action alternative would result as pressures on the land and vegetation increase from wild horse grazing and wildlife grazing. Vegetative cover would continue to be utilized at high to severe rates, and land health would continue to decline, which would increase impacts to Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch habitats. Impacts resulting from an expanding horse herd when combined with other past, present, and reasonably foreseeable land uses and natural phenomena such as wildfire and persistent drought, could further degrade threatened, and sensitive species habitat.

Alternative B – Proposed Action

Direct and Indirect Effects

Potential direct impacts to Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch associated with the Proposed Action would include risk of trampling and crushing Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch in the LBCWHR as the BLM, Friends of the Mustangs personnel, and contractors install traps, haul water, fly a helicopter to push horses down canyon, and transport horses from the range to the adoption facilities. Impacts would generally be highly localized (roadside impacts), limited to periods of the gather. The CNHP *Sclerocactus glaucus* model showed 235 acres of Colorado hookless cactus habitat that may overlap with the Proposed Action. The model predicts that 8 acres contain very low suitable habitat, 48 acres of low suitable habitat, 97 acres of moderate suitable habitat, 82 acres of high suitable habitat.

BLM conducted a habitat assessment for Colorado Hookless cactus and narrow-stem gilia in Coal Canyon and Main Canyon in early April 2024 to determine survey needs. During that assessment, 22 previously unknown Colorado hookless cacti and one known Colorado hookless cactus was documented within 200 meters of the proposed project area. Additionally, narrow-stem gilia habitat was also determined to be present. Follow up surveys were completed in April and May of 2024 in and around the proposed trap and wing fences in Main Canyon. Four additional occurrences of cactus and one additional occurrence of narrow-stem gilia were recorded during the surveys. Surveys recorded over 30 cacti in project area, and approximately 200 narrow-stem gilia along the access road. Design features have been incorporated into the project to avoid impacts to the rare plants. Limiting the area of disturbance in Coal Canyon to the disturbance footprint of the road and utilizing existing disturbance areas for trap locations would reduce impacts to Colorado

hookless cactus, narrow-stem gilia, or Naturita milkvetch related to this project. If road maintenance is necessary in Coal Canyon or Main Canyon, the operator would work closely with the Grand Junction Field Office ecologist to complete the work outside of the blooming season (April through July) and to ensure known occurrences of sensitive plant species are avoided. If an area with narrow-stem gilia, or Naturita milkvetch cannot be avoided, project activities would not be conducted during the blooming season (April through July) and rare plants recorded during 2024 surveys would be flagged as avoidance areas. If flagging is not sufficient to protect the rare plants, BLM may install a temporary fence to protect that occurrence from trampling or being crushed by motorized vehicles. Through the implementation of project design features impacts to Colorado hookless cactus will be avoided, and not rise above baseline conditions. BLM would waive the special status species NSO and mitigate impacts through the design features.

Indirect impacts from the project would be related to the reduction in the number of wild horses on the range. Under the Proposed Action the BLM would reduce the wild horse herd to the lower range of the AML (approximately 90 horses). This reduction in herd size would persist over the next 10-years from the 2024 gather and subsequent gathers, which would have a long-term beneficial impact on the Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch. The BLM expects that a reduction of wild horses would increase the overall land health of the LBCWHR and decrease the chance of trampling by foraging horses.

Finding for Public Land Health Standard 4

The Proposed Action alternative would result in land health across the wild horse range likely improving and may lead to an upward trend due to the reduced herd size, decreased disturbance, and utilization rates on vegetation in the area.

Cumulative Impacts Analysis

Cumulative impacts to Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch associated with the Proposed Action are anticipated to be beneficial. The horse herd size would be reduced, which would maintain rangeland health conditions as well as herd health. These management objectives would operate within the context of past, present, and reasonably foreseeable uses in the herd management area. There would be a reduction in disturbance to habitat in the project area due to a decrease in grazing levels and trampling.

There would be no cumulative effects to special status species under this alternative as the horse herd would be maintained at management objectives as described and analyzed in the Grand Junction RMP EIS section 4.3.6.

Alternative C – No IUD or Mare to Stallion Ratio Adjustments

Direct and Indirect Effects

Impacts to Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch under Alternative C would be similar to those described under Alternative A. The BLM expects that if IUDs and sex ratio adjustments are not utilized, then population growth would be elevated over the level occurring under Alternative B. These elevated impacts would be related to higher population levels, which would result as pressures on the land and vegetation increase from wild horse and

wildlife grazing. Vegetative cover would continue to be utilized at high to severe rates, and land health would continue to decline, which would increase negative impacts to rare plant habitat.

Cumulative Impacts Analysis

Cumulative impacts to Colorado hookless cactus, narrow-stem gilia, and Naturita milkvetch under Alternative C would be greater than Alternative B the Proposed Action but less than Alternative A the No Action alternative. Impacts resulting from an expanding horse herd when combined with other past, present, and reasonably foreseeable land uses and natural phenomena such as wildfire and persistent drought, could contribute towards threatened and sensitive species habitat degradation.

Finding for Public Land Health Standard 4

Finding for land health standard 4 for special status species under the no IUD or mare to stallion ratio adjustments alternative would result in land health across the wild horse range likely decreasing further into “not meeting” categories, negatively impacting threatened, and sensitive species habitat degradation due to increased disturbance and high to severe rates of utilization ratings on vegetation in the area.

5.3.6 ISSUE 6: How would the proposed wild horse gather impact other important wildlife?

Affected Environment

Habitat in the project area supports most species of wildlife expected in pinyon-juniper woodland plant communities. Raptors, songbirds, mammals, reptiles, and amphibians are present in suitable habitats in the management area. Hunted species include mule deer, elk, and mountain bighorn sheep. Fish are not present in the project area; all streams are ephemeral or intermittent.

Finding for Public Land Health Standard 3:

A range of land health conditions for biotic integrity exist in and near the proposed bait and trap locations, which are located primarily on flatter, more productive mesa tops along existing roads. The most recent analysis of 20 land health points in the proposed bait and trap areas indicates 50 percent meet biotic integrity standards, 35 percent are not meeting, and 15 percent are meeting with problems. Primary reasons for problems or not meeting standards are dominance of cheatgrass (5 sites), lack of plant diversity (2 sites), and in one case, heavy horse grazing preventing native grass seed production.

Environmental Effects

Alternative A – No Action

Direct and Indirect Effects

Direct effects from gathering wild horses would not occur under the No Action alternative. The No Action alternative could have indirect negative effects on wildlife if wild horse numbers are maintained or increased. If utilization by wild horses exceeds 60 percent, less forage would be available for wildlife forage and cover.

Finding for Public Land Health Standard 3:

In this situation, land health across the wild horse range would likely deteriorate further with more areas falling into the not meeting category, negatively impacting cover and forage available for wildlife.

Cumulative Impacts Analysis

The No Action alternative would result in increased horse numbers which would lead to declining land health; areas currently meeting land health standards could decline into the not meeting category and an increase in invasive plants is likely. Areas not meeting standards, e.g., dominated by cheatgrass, represent a long-term management challenge in that trends toward greater cheatgrass dominance which are extremely difficult to reverse.

Alternative B – Proposed Action

Direct and Indirect Effects

Direct effects would be limited to some disturbance to soil and plants in areas along existing roads accessible by trucks and horse trailers, as well as displacement of individuals during gather activities from noise and human presence. Indirect effects would tend toward improvement to various resources: 1) less impact to riparian areas because of reduced number of horses visiting and grazing; and 2) reduction in overall grazing impacts should increase the likelihood of an upward trend in land health and an increase in cover and forage available for wildlife.

Finding for Public Land Health Standard 3:

Under the Proposed Action reduction of the herd size would improve land health conditions and may lead to an upward trend if other conditions support land health.

Cumulative Impacts Analysis

With successful implementation of the Proposed Action utilization rates would be meeting objectives as analyzed in the Grand Junction Field Office RMP Final EIS section 4.3.5.

Alternative C – No IUD or Sex Ratio Adjustments

Direct and Indirect Effects

Under this alternative there could be indirect negative effects on wildlife if wild horse numbers are maintained at higher levels. If utilization by wild horses exceeds 60 percent of available forage, less forage would be available for wildlife food and cover.

Finding for Public Land Health Standard 3:

In this situation, land health across the wild horse range would likely deteriorate further with more areas falling into the not meeting category, negatively impacting cover and forage available for wildlife.

Cumulative Impacts Analysis

The impacts of this alternative would be between the No Action and Proposed Action alternatives and would result in horse numbers being maintained at higher levels which would likely lead to declining land health; areas currently meeting land health standards could decline into the not meeting category and a likely increase in invasive plants. Areas not meeting standards, e.g., dominated by cheatgrass, represent a long-term management challenge in that trends toward greater cheatgrass dominance are difficult to reverse.

5.3.7 ISSUE 7: What would be the impacts to prehistoric and historic cultural resources from the proposed wild horse gather?

Affected Environment

A records search of the general project area indicates that approximately 175 acres (8.2%) of the possible 1,882 acres identified for bait trap locations in Map 1.1-1 have been surveyed to-standard for cultural resources. During those surveys, 17 cultural resource sites were located, of which 10 are considered eligible or potentially eligible for listing on the National Register of Historic Places. The sites include prehistoric open lithic sites and open and sheltered campsites, a prehistoric/Protohistoric Ute trail, historic ranching sites, and historic roads. The BLM expects that similar site types would be encountered in the remaining portions of the Proposed Action Area of Potential Effect (APE).

Environmental Effects

Alternative A – No Action

Direct and Indirect Effects

Under the No Action Alternative, a gather would not occur, and the wild horse population would continue to grow. Cultural resources can be impacted by horses much in the same way as other livestock, and increased numbers can lead to increased surface disturbing impacts to cultural resources including trampling, artifact breakage, and mixing of archaeological deposits. Indirect impacts such as vegetation removal can increase erosion processes on sensitive sites, which can lead to loss or damage of sites.

Cumulative Impacts Analysis

The No Action alternative would result in a larger wild horse population, which would likely result in decreased land health. This would lead to decreases in vegetation and increases in erosion impacts to cultural resources, which could result in their permanent loss.

Alternative B – Proposed Action

Direct and Indirect Effects

The effects of the Proposed Action would be similar to those under the No Action Alternative; however, horse populations would be reduced and therefore impacts would be reduced. Per the design features, helicopter or bait traps, and other temporary facilities would only be placed in areas of prior existing disturbance exempt from new cultural inventor or where cultural resource inventory has occurred and would not be placed within cultural resource sites. There would be minimal or no impacts to cultural resources due to Proposed Action design.

Cumulative Impacts Analysis

Impacts would be the similar to those described under the No Action alternative but may be reduced under this alternative.

Alternative C – No IUD or Sex Ratio Adjustments

Direct and Indirect Effects

The effects of the Proposed Action would be similar to those under the No Action alternative; however, horse populations would be reduced and therefore impacts would be reduced. Per the design features, helicopter or bait traps and other temporary facilities would only be placed in areas of prior existing disturbance exempt from new cultural inventor or where cultural resource inventory has occurred and would not be placed within cultural resource sites. There would be minimal or no impacts to cultural resources due to Alternative C design. Such minimal impacts could be greater than under the Proposed Action, as average horse populations may be larger and the use of more frequent trapping to maintain herd size within AML would increase the potential for surface disturbing activities.

Cumulative Impacts Analysis

Impacts would be the same or similar to those described under the No Action alternative but may be reduced under this alternative, though likely not reduced as much as under Alternative B.

5.3.8 ISSUE 8: How would the wild horse gather impact wilderness characteristics present in the Little Book Cliffs Wilderness Study Area and surrounding lands with wilderness characteristics?

Affected Environment

This Little Book Cliffs Wilderness Study Area overlaps much of the Little Book Cliffs Wild Horse Range. BLM initially identified the area which became the WSA in the August 1979 BLM Initial Wilderness Inventory and the unit was carried forward for wilderness study in the 1980 Intensive Wilderness Inventory. A unit consisting of 26,525 acres of public lands was identified as a WSA containing the required size, naturalness, outstanding opportunities for solitude and primitive and unconfined recreation, and supplemental values. The BLM identified the presence of wild horses within the WSA as part of the supplemental values of the area:

“Several supplemental values exist in the unit, the predominant one being the presence of 65-100 wild horses. Cultural values of the Fremont Culture are found here, as well as several natural bridges and hoodoos. The unit is in close proximity to Grand Junction, Colorado.”

The WSA is a gently upward sloping plateau dissected by four major canyon systems (Main, Coal, Cottonwood, and Spring Canyons), with many side canyons. The canyons are characterized by steep cliff walls up to 1,000 feet high. Vegetation of the WSA is scattered pinyon-juniper on canyon slopes and ridges, with sagebrush, saltbrush, and rabbitbrush found in canyon bottoms. Of the 26,525 acres in the WSA, 22,772 acres are within the Wild Horse Range.

In the October 1991 Grand Junction District Wilderness Study Report, BLM recommended the entire 26,525 acres of Little Book Cliffs WSA as nonwilderness. The primary reason the WSA was not recommended for future wilderness designation is to maintain the potential for development of high mineral values. As of October 1990, when BLM made this recommendation, there were 25 pre-FLPMA oil and gas leases covering approximately 43% of the WSA. Under BLM Wilderness Study Area policy, existing mineral leases will be allowed to be developed according to valid existing rights.

Since first qualifying as a WSA in 1980, some of the area's wilderness characteristics have been modified, including the construction of a road through a low ridge between Main and Coal Canyons to access an oil and gas well in Main Canyon. The well has since stopped production and the road is no longer used for oil and gas operations. BLM designated a portion of the road as a trail open to non-motorized and non-mechanized use as part of the travel management plan accompanying the 2015 Grand Junction Field Office Comprehensive Travel Management Plan. This trail has been used for previous wild horse gathers in Little Book Cliffs Wild Horse Range, with motorized uses occurring for gather operations.

In 2017, BLM updated wilderness characteristics inventories for lands adjacent to Little Book Cliffs Wilderness Study Area. The proposed project overlaps several units inventoried for wilderness characteristics, two of which qualify as lands with wilderness characteristics: Book Cliffs South (70,181 acres) and Winter Flats (1,597 acres). These units have yet to be considered for management through a land use planning process.

Environmental Effects

BLM manual 6330 – Management of Wilderness Study Areas provides guidance and direction for management of WSAs. The manual specifically addresses wild horse and burro management in Section D, page 1 through 36, providing the general direction:

“Wild horse and burro herds are managed in WSAs only within geographic areas identified as having been used by a herd as its habitat in 1971 as directed by the Wild Free-Roaming Horse and Burro Act. Wild horses and burros are managed to remain in balance with the productive capacity of the habitat; this includes managing herds so as not to impair wilderness characteristics. Wild horse and burro populations must be managed at appropriate management levels so as to not exceed the productive capacity of the habitat (as determined by available science and monitoring activities), to ensure a thriving natural ecological balance, and to prevent impairment of wilderness characteristics, watershed function, and ecological processes. The BLM should limit population growth or remove excess animals as necessary to prevent the impairment of the WSA.”

Alternative A – No Action

Direct and Indirect Effects

The No Action Alternative would allow wild horses to continue overutilizing resources within the WSA and surrounding lands with wilderness characteristics and increase herd numbers beyond the determined AML. Heavy use of vegetation and riparian areas by wild horses would continue and increase under the No Action alternative, leading to a degradation of wilderness characteristics over time. The direct and indirect effects from the No Action Alternative would be a decrease in

apparent naturalness throughout the WSA and surrounding lands with wilderness characteristics, due to the decrease in vegetation.

Cumulative Impacts Analysis

The cumulative impacts of not managing herd numbers, when combined with other past, present, and reasonably foreseeable actions, including the ongoing drought in Western Colorado, would result in a continued decline in apparent naturalness of the WSA and surrounding lands with wilderness characteristics.

Alternative B – Proposed Action

Direct and Indirect Effects

Under the Proposed Action, wilderness characteristics of naturalness and outstanding opportunities for solitude would be negatively affected in the short-term, while mostly maintained in the long-term. Both helicopter drive as well as bait and water trapping and other method included in the Proposed Action would result in a temporary decrease in the apparent naturalness, due to the increased presence of structures in the WSA and lands with wilderness characteristics. These structures would eventually be removed, and most would be placed outside of WSA boundaries. Outstanding opportunities for solitude would be impacted during the time of the gather(s) due to increased human presence in the WSA and surrounding lands with wilderness characteristics.

The use of helicopters and placement of bait and water traps would affect opportunities for solitude and primitive recreation in both the WSA and surrounding lands with wilderness characteristics. Any time a visitor to these areas realizes the sights or sounds of human development these opportunities are diminished. The impacts would occur would be localized to the time and place gather activities.

Long-term impacts would be realized from vehicle traffic along the trail between Coal and Main Canyons. While the trail was initially constructed as a road to accommodate motorized and mechanized use to access oil and gas developments in Main Canyon, it has since become overgrown with vegetation and appears natural in some areas. The BLM currently manages this as a trail open to foot and horse travel, with administrative uses permitted for activities such as wild horse gathers. Under the Proposed Action, maintenance and motor vehicle use would occur along the trail for wild horse gathers, which would disturb vegetation and degrade naturalness. As the trail is utilized for future gathers, apparent naturalness is likely to continue to be degraded along its length. Impacts would be localized to the length of the route between the Coal and Main Canyons.

Supplemental values would not be affected as wild horses would continue to occupy Little Book Cliffs WSA.

Cumulative Impacts Analysis

Cumulative impacts to wilderness characteristics under the Proposed Action, when combined with other past, present, and reasonably foreseeable actions would be minimal.

Alternative C – No IUD or Sex Ratio Adjustments

Direct and Indirect Effects

Impacts to Wilderness Study Areas under Alternative C would be similar to those under the Proposed Action. Although larger horse populations could lead to increased damage and loss of riparian habitat and native vegetation.

Cumulative Impacts Analysis

Cumulative impacts to wilderness characteristics under the Alternative C, when combined with other past, present, and reasonably foreseeable actions would be minimal.

5.3.9 ISSUE 9: What would be the impacts to recreational wild horse viewing from the proposed gather?

Affected Environment

The Wild Horse Area is in an area that is not designated as a recreation management area. However, the public enjoys seeing wild horses roaming free and the WHA is a popular destination for that recreation activity. It attracts both local and out-of-town visitors who come to see free-roaming horses in wild. Wild horse viewing opportunities are frequently highlighted in promotions encouraging people to visit the region. Based on a traffic counter at the Coal Canyon Trailhead, which serves as a primary access point for horse viewing, the BLM estimated annual visitation of 14,707 in 2023. Access to the LBCWHR from other points, including the Low Gap recreation site, do not currently have a traffic counters, but based on data from previous years at the Low Gap site, the BLM estimates current annual visitation at approximately 4,869. Visitor use data for other recreation use in the area is difficult to quantify, but is generally light. Visitor use numbers in this area have remained fairly stable over the past several years, while other types of visitation has increased across the field office.

Other activities that occur in the area include hunting, camping, hiking, rock hounding, photography, wildlife viewing, off highway vehicle (OHV) use, and sightseeing. Big game hunting (deer and elk) is popular in the fall.

Environmental Effects

Alternative A – No Action

Direct and Indirect Effects

Impacts from gather operations discussed under the Proposed Action would not occur. The expected increase in horse numbers would improve the likelihood for visitors to view wild horses. However, these viewing opportunities may be diminished due to decreased body condition of the horses and poor range conditions due to over utilization. Hunting within the LBCWHR may be negatively impacted as wild animals seek resources where less competition exists.

Cumulative Impacts Analysis

Impacts would be similar to those described under the Proposed Action alternative.

Alternative B – Proposed Action

Direct and Indirect Effects

Opportunities to view wild horses in the LBCWHR would continue, however, they would be mostly limited to the boundaries of the LBCWHR due to smaller horse population sizes. Gather activities would temporarily interrupt or interfere with viewing opportunities and make horses harder to find for the duration of the gather operations. Fertility control treatment would be expected to slow population growth and opportunities to view mares with foals during the next 2 to 3 years would be slightly reduced. Adjustments to sex ratios would change the composition of herds which would not be noticeable to most visitors. Viewing opportunities associated with the presence of wild horses would continue and overall changes to annual visitation would not be substantially affected due to the relatively short duration of the gather operations.

If gather operations occur during fall hunting seasons, hunting opportunities would likely be diminished for the duration of gather operations and for a period afterward as wildlife re-occupies the area. Affected hunters would likely relocate to areas of the hunting unit not affected by the gather activities. These displaced hunters could concentrate more hunters in areas not disturbed by the gathers. Increased hunter numbers can reduce visitor satisfaction with the hunting opportunities and experiences and reduce hunter success.

Cumulative Impacts Analysis

Cumulative impacts to recreation would most likely be related to hunting opportunities. Over the long-term improved land health and vegetative conditions would attract more wildlife to the area, which could increase hunting opportunities. In addition to the periodic short-term disruptions to hunting opportunities, other planned actions in the area would likely affect hunting opportunities. Prescribed burns, wildfires and subsequent re-seeding activities could improve habitat and forage for deer and elk, potentially increasing the numbers of those game animals, and increasing opportunities for successful hunts. These fire-related activities and their potential for long-term improvements in range health would likely have more positive impacts to hunting opportunities than the short-term negative impacts from horse gather operations. If visitor use numbers remain stable, there would be few changes to recreation experiences that are typically associated with increased use.

Alternative C – No IUD or Sex Ratio Adjustments

Direct and Indirect Effects

The affects to recreation from this alternative would be similar to those described in Alternative B except that it would eliminate the reduced opportunity for visitors to observe mares with foals in the 2 to 3 years following gather operations.

Cumulative Impacts Analysis

The cumulative impacts from this alternative would be similar to those described in Alternative B.

5.3.10 ISSUE 10: How would the proposed gather impact the Little Book Cliffs wild horse herd?

Affected Environment

Current records kept by the BLM with assistance of the local volunteer group show a current population as of September 2023, as 203 horses including 22 foals, and a total of 222 horses in 2024, which exceeds the AML for the LBCWHR. These records are based on year-round ground surveys and have proven to be accurate in the past. Of the 193 adult wild horses 42% are males and 58% are females. Foaling records for the past several years show a much higher percentage of fillies born as compared to colts.

In 2002, a fertility control research program in coordination with the Biological Research Division (BRD) of the United States Geological Service (USGS) was initiated in the Little Book Cliffs Wild Horse Range to study the effectiveness of porcine zona pellucida (PZP) and the effects of the drug on wild horses. Details of the research program are contained in the Environmental Assessment and Gather Plan Document CO-GJFO-32-EA Appendix E. The research program followed the national field trial research protocol. In 2007, fertility control activities shifted from the Individual Based Research study to the Population Based Research. Field darting under this research program ended in 2006 but BLM and volunteers continue to keep records of foaling data and administered fertility control. Following 2006, fertility control efforts continued within the LBCWHR through additional NEPA analysis. As of the end of 2012, 80 mares have been darted as part of the fertility control program since 2002. Darting efforts and data collection are similar to those followed under the research program. A darting team comprised of BLM personnel and volunteers conduct the fertility control efforts based on BLM policy and protocol. The vaccine induces one year of infertility. The number of foals per year has been reduced since 2004. Foal counts had ranged from 24 to 41 foals per year prior to the fertility program resulting in a population growth in the 20 to 25 percent range. Since the fertility program foal counts have ranged from 11 to 26 dropping the annual growth rate to 9 to 15 percent. Foal counts since 1997 are shown below.

Table 3.5.10-1 Foal Count by Year

YEAR	FOALS	YEAR	FOALS	YEAR	FOALS	YEAR	FOALS
1997	32	2004	25	2011	11	2018	12
1998	32	2005	17	2012	17	2019	10
1999	37	2006	26	2013	11	2020	16
2000	31	2007	24	2014	13	2021	25
2001	38	2008	17	2015	15	2022	28
2002	41	2009	16	2016	18	2023	22
2003	40	2010	11	2017	19		

Behavioral observations by the research team occurred from the initiation of the program up until 2006. The basis for observations is to monitor behavioral characteristics and determine if there are variations from normal behavior. Record keeping of foaling rates and foaling periods for treated mares would continue while fertility control efforts are being conducted. The fertility program has reduced the population growth rate for the herd but still allows for some reproduction to improve or maintain genetic diversity.

The US Geological Survey led a study in the LBCWHR to determine whether wild horse feces could be used for reliable DNA sampling and inferences about habitat use (King et al. 2018, 2021). Results indicated population estimates from repeated fecal DNA are accurate, but less precise and more expensive than ground-based counts of actual herd size in this specific herd (Schoenecker et al. 2021).

The use of contraceptives has long been recognized as a humane method to limit the growth of wild horse herds while minimizing disruption to the herd gene pool (i.e., Gross 2000). Individually treated mares may have their genetic contributions delayed but not removed. The use of contraceptives also increases the time between gathers, with associated cost benefits (Folt et. Al. 2023b) and reduction of resource impacts.

Gather History and Population Characteristics

The gather history since 1977 is provided in Table 5.2.1-1 Summary of Previous Gathers in section 5.2.1.

Population growth rates have declined since the fertility program was initiated. Following are the estimated population numbers since 2008. Population numbers shown were as of January 1 of each year.

Table 3.5.10-2 Approximate* Wild Horse Population

YEAR	Estimated Population	Year	Estimated Population
2008	102	2019	144
2009	118	2020	146
2010	135	2021	170
2011	135	2022	188
2012	140	2023	203
2013	152	2024	222
2014	143		
2015	149		
2016	152		
2017	158		
2018	173		

* Approximate population numbers are based upon ground counts and best available information.

Genetic Diversity

Blood samples were collected from removed animals in 1992 and 2002 gathers to monitor genetic baseline data (e.g., genetic diversity, similarity to domestic breeds, and the frequency of various genetic blood markers). Blood samples were not taken during the 2004 and 2007 gather given the short time frame since the samples in 2002. Cothran (2003) noted that the 2002 samples showed a generally high level of genetic diversity, which was higher than the 1992 samples. Hair follicle samples were taken in 2013 and 2019, for analysis of microsatellite alleles (Cothran 2014, 2020). Cothran reported average genetic diversity in the 2014 sample (relative to other wild horse herds),

and higher levels in the 2020 sample. Cothran reported no unique blood markers or microsatellite alleles in 2003, 2014, or 2020.

Currently, there is no evidence to indicate that the LBCWHR suffers from low genetic diversity, or a risk of deleterious effects of inbreeding. The following summarizes what is known about the LBCWHR as it pertains to genetic diversity based on the 2014 and 2020 reports by Dr. Gus Cothran:

- Genetic variation in the LBCWHR was average to moderately high. Allelic diversity also was fairly high.
- Genetic variation indices based on samples from the LBCWHR has fluctuated somewhat since 1992 but has not been at levels that are cause for concern.
- In 2020, Cothran recommended sampling again by 2025, to monitor for any notable changes in genetic diversity.

The 2013 National Academies of Sciences report (NAS 2013) includes additional evidence that shows that the LBCWHR herds are not genetically unusual, with respect to other wild horse herds, and that supports the interpretation that the Little Book Cliffs horses are components in a highly connected metapopulation that includes horse herds in many other HMAs. Specifically, Appendix F of the 2013 NAS report is a table showing the estimated 'fixation index' (F_{st}) values between 183 pairs of samples from wild horse herds. F_{st} is a measure of genetic differentiation, in this case as estimated by the pattern of microsatellite allelic diversity analyzed by Dr. Cothran's laboratory up to that time. Low values of F_{st} indicate that a given pair of sampled herds has a shared genetic background. The lower the F_{st} value, the more genetically similar are the two sampled herds. Values of F_{st} under approximately 0.05 or lower indicate virtually no differentiation, values of 0.10 or lower indicate very little differentiation, and only if values are above about 0.15 are any two sampled subpopulations considered to have evidence of elevated differentiation (Frankham et al 2010). F_{st} values for samples from the LBCWHR had pairwise F_{st} values that were less than 0.05 with 111 other sets of genetic samples (NAS 2013) including from herds in California, Colorado, Idaho, New Mexico, Nevada, Oregon, Utah, and Wyoming – which indicates an extreme genetic similarity to a fairly large number of other BLM-managed herds. In a recent preprint analysis, Cothran et al. (2024) used 2002 and 2013 samples from the LBCWHR in an updated analysis of wild horse herd genetic connectivity and found that the pattern of microsatellite allele frequencies placed LBCWHR samples near the center of a principal components analysis distribution; this also indicates very high similarity to a large number of other wild horse herds.

Environmental Effects

Population modeling was completed for the Proposed Action and alternatives to analyze how the alternatives would affect the wild horse populations. Analysis using the PopEquus software (Folt et al. 2023a) included removal of excess wild horses with no fertility control at the gather, as compared to alternatives which consider removal of excess wild horses with fertility control. This model was used to estimate the population growth and size of herds over a 10-year, consistent with BLM IM 2009-090. The No Action (no removal) alternative was also modeled, Appendix C. The primary objective of the modeling was to identify if any of the alternatives “crash” the population or cause extremely low population numbers or growth rates. The results of population modeling show that minimum population levels and growth rates would be within reasonable levels and

adverse impacts to the population would not be likely under Alternatives B and C. Graphic and tabular results are displayed in detail in Appendix C.

Alternative A – No Action

Direct and Indirect Effects

Under the No Action alternative, excess wild horses would not be removed from the LBCWHR at this time. Fertility control efforts would continue as analyzed in CO-GJFO-02-32-EA and CO-130-2007-010-EA and subsequent NEPA documents. The animals would not be subject to the individual direct or indirect impacts as a result of the bait and water trapping operation or helicopter gathering. The population would remain above the AML and the current population of 222 wild horses would continue to increase at approximately a 10 to 15 percent growth rate and exceed the carrying capacity of the range over time. This growth rate is based upon the continued use of fertility control. Though it may require several years for the population to reach catastrophic levels, by exceeding the upper limit of the management range (150), this alternative poses the greatest risk to the long-term health and persistence of the LBCWHR wild horse population.

Cumulative Impacts Analysis

Over the course of time, the animals would deteriorate in condition as a result of declining forage availability and the increasing distance traveled between forage and water sources. The mares and foals would be affected most severely. The continued increase in population size would eventually lead, if BLM did ultimately intervene, to losses to the herd through starvation or dehydration, which would be directly correlated to lack of available forage, water, and the degradation of rangeland habitat. A point would be reached where the herd reaches the ecological carrying capacity and both the habitat and the wild horse population would be critically unhealthy. This would be contrary to the purpose and need to maintain a thriving natural ecological balance and the directives of the act.

Alternative B – Proposed Action

Direct and Indirect Effects

The Proposed Action would utilize herd characteristics, objectives, and the removal considerations from the 2002 PMP when removing individual animals to the most feasible extent possible. The 2023 population count, based on the September 25, 2023, ground census, was approximately 203 wild horses, including 22 foals born in 2023. The updated 2024 population count is 222 horses. Herd characteristic objectives have previously been analyzed in the 2002 PMP (Appendix A) and are incorporated by reference. The Standard Operating Procedures for Mare Fertility Control Treatments (Appendix B) for handling and IM 2013-059 are incorporated as part of the Proposed Action.

Gather Effects

Under the Proposed Action, excess wild horses would be captured and removed from the LBCWHR utilizing a helicopter drive trapping, bait and water trapping, or combination of both and fertility control.

Impacts to individual animals could occur as a result of stress associated with the gather, capture, processing, and transportation of animals. The intensity of these impacts would vary by individual and would be indicated by behaviors ranging from nervous agitation to physical distress. Sometimes hitting panels or trailers or interaction with other wild horses in a confined space can result in bruising scrapes or cuts. Mortality to individuals from this impact is infrequent but can occur. Other impacts to individual wild horses include separation from individual bands and removal of animals from the population. Impacts are the same regardless of gather method used.

Population-wide impacts could occur during or immediately following implementation of the Proposed Action. Potential impacts include the displacement of bands during capture and the associated re-dispersal, modification of herd demographics (age and sex ratios), temporary separation of members of individual bands of horses, reestablishment of bands following release, and the removal of animals from the population. Except for changes to herd demographics (removed individuals), direct population-wide impacts would be temporary in nature with most, if not all, impacts disappearing with release.

Indirect impacts can occur to horses after the initial stress event and could include increased social displacement or increased conflict between studs. These impacts are known to occur intermittently during wild horse gather operations. Traumatic injuries may occur and typically involve biting and kicking bruises. After being gathered, horses would be under supervision of a given facility's attending veterinarian(s), who would monitor animal health. Vaccinations would be given within 7 days of the animals being received at the facility.

The initial gather and any future action beginning post initial gather would make progress towards bringing the population within the AML. Less competition for forage and water resources would reduce stress and promote healthy horses on healthy rangelands.

The Proposed Action would also allow for the continued collection of information on herd characteristics, determination of herd health through direct examination of animals, and collection of genetic samples for monitoring of genetic variation.

The opportunity to conduct small removals over a multi-year period starting after the initial gather period in the fall of 2024, coupled with the fertility control treatment program, could allow for flexibility in management of the wild horse numbers, as the number of mares treated with fertility control could be adjusted based on population trends.

Over the past 35 years, various effects to wild horses as a result of gather activities have been observed and studied. Effects to wild horses would be both direct and indirect, occurring to both individual horses and the entire population.

The BLM has conducted wild horse gathers since 1977. During this time, methods and procedures have been identified and refined to minimize stress and adverse effects to horses during gather implementation. The Comprehensive Animal Welfare Program Standards would be implemented to ensure safe and humane gathers occur and would minimize potential stress and injury to wild horses.

Wild horse mortality at BLM gathers averages about one percent (1.0%) or less nationwide (Scasta 2019). More than two-thirds of those horses included in all gather related mortality are humanely euthanized due to pre-existing conditions (Scasta 2019) in accordance with BLM policy (BLM 2015a). Fewer than 0.4% of horses gathered by the BLM, on average, die due to acute causes that are attributable to gather-related injuries. The mortality rate was slightly higher for bait trap gathers (approximately 0.4%) than helicopter drive trap gathers (approximately 0.3%; Scasta 2019). Scasta et al. (2021) concluded that fewer than 20% of wild horse deaths at gathers were attributable to acute causes, with the great majority being euthanasia of animals with pre-existing chronic conditions. These data confirm that the use of helicopters and motorized vehicles are a safe, humane, effective, and practical means for the gather and removal of excess wild horses (and burros) from the public lands.

Individual direct effects to wild horses include stress incurred during capture, sorting, handling, and transportation of the animals. The intensity of these effects varies by individual horse and is manifested by behaviors ranging from nervous agitation to obvious physical distress.

A variety of injuries may occur after a wild horse has been captured and is either within the trap site corral, the temporary holding corral, during transport between facilities, or during sorting and handling. Occasionally, wild horses may sustain a spinal injury or a fractured limb but based on prior gather statistics, serious injuries requiring humane euthanasia occur in less than 1 percent of horses captured (Scasta 2019, Scasta et al. 2021). Similar injuries could be sustained if wild horses regardless of trapping method, as the animals still need to be sorted, aged, transported, and otherwise handled following their capture. Injuries resulting from kicks and bites or from collisions with corral panels or gates can occur. Injuries sustained by wild horses while being herded to trap site corrals by helicopter may include bruises, scrapes, or cuts to feet, legs, face, or body from rocks, brush, or tree limbs.

To minimize the potential for injuries from fighting in the corral, the horses are transported from the trap site to the temporary (short-term) holding facility where studs are separated as quickly and safely as possible, then moved into large holding pens where they are provided with hay and water. On many gathers, no wild horses get injured from fighting.

Indirect individual effects are those which occur to wild horses after all handling and processing is completed. These may include miscarriages, increased social displacement, and conflict among studs. These effects are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be a brief 1-to-2-minute skirmish between two studs opting for dominance and ending when one retreats. Injuries can also occur from these skirmishes and typically involve a bite or bruise from a kick. Like direct individual effects, the frequency of these effects varies with the population and the individual. Observations following capture indicate the rate of miscarriage varies but can occur in about 1 to 5% of the captured mares, particularly if the mares are in poor body condition or health.

Foals may be orphaned during a gather if the mare rejects the foal, the foal becomes separated from its mother and cannot be matched up following sorting, the mare dies or must be humanely euthanized during the gather, the foal is ill or weak and needs immediate care that requires removal from the mother, or the mother does not produce enough milk to support the foal. King et al. (2023)

studied the fate of wild horse foals, as part of a broader 2016 through 2020 study on the effects of having some geldings in with breeding herds (King et al. 2022). In two HMAs in Utah that were intensively monitored for 4 years, about 5% of foals died in their first year of life, and about 2.5% of foals younger than 70 days old that became separated from their mothers (dams) survived and joined other social bands. BLM gather activities were not associated with any statistical increase in foal mortality, foal separation from their dams, or infanticide. King et al. (2023) concluded that, "...separation of offspring may be more common than previously considered, and that this is a natural event that does not necessarily result in mortality. ... the separation of young foals from their dams was not a result of human disturbance or handling, resulting in the conclusion that foals even as young as 2 months old have a good chance of survival if separated from their dam or orphaned, as long as other social groups remain on the range that they can join." On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the mother rejected it or died. These foals may be in poor health. Every effort is made to provide appropriate care to orphan foals. Veterinarians may be called to administer electrolyte solutions or orphan foals may be fed milk replacer as needed to support their nutritional needs. Orphan foals may be placed in a foster home in order to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

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

Implementation of the Proposed Action would lower the overall growth rate for the LBCWHR over the long term by pairing gathers with population growth suppression in the form of fertility control vaccine treatments, and possible flexible IUD use, for mares. Reduced population growth rates achieved through fertility control treatments would be expected to: extend the time until AMLs are exceeded, increase the intervals between drive trap or bait trap gathers, and reduce disturbance to individual animals and herd social structure over the foreseeable future. At the herd-level, PopEquus modeling (Appendix C) suggests that the population can be maintained within AML through a combination of removals and fertility control treatments.

Possible physiological, behavioral, and other effects of fertility control vaccine treatment are detailed in Appendix C, are summarized here. At the demographic population level, the expected effects of fertility control vaccine application would be to reduce the growth rate of the herd. This would not necessarily cause a problematic loss of genetic diversity, given the apparent fact that horses in the LBCWHR are part of a larger metapopulation (NAS 2013, Cothran et al. 2024), and the BLM has the potential to introduce animals from other HMAs to each of the herds. In terms of genetic diversity loss attributable to fertility control vaccine use, vaccine use should reduce the average number of foals per mare but would not necessarily prevent treated mares from giving birth to some foals over the course of their lifetime. Mares may birth foals before treatment causes long-lasting infertility, or at some point after the immunological effects of treatment have worn off. At the individual level, fertility control vaccines are expected to cause an immune response that leads to reduced fertility. Other potential effects on treated mares are detailed in Appendix C.

Fertility control vaccines are expected to have limited duration of effects unless multiple doses are given to the same animal. For example, if a mare receives four or more doses of ZonaStat-H PZP vaccine, that mare may become infertile for many years (Nunez et al. 2018). The specific number of doses required to cause long-term infertility depends on the type of fertility control vaccine that is administered. Mares that do not receive enough vaccine doses to stay infertile typically return to fertility as the immune response to the vaccine wears off. Because treated mares may have higher survival and live longer lives, the age structure of the population may continue to include more mares than stallions unless sex ratio adjustments are used to bring the herd closer to 50:50 sex ratio, and the generation time of potentially breeding mares could increase. One net effect of a longer generation time can be to increase genetic effective population size (i.e., Gross 2000). It is not expected that these herds would lose genetic diversity and have observed heterozygosity drop below the threshold of concern (BLM 2010) during the 10-year duration of the Proposed Action. However, if BLM genetic diversity monitoring reveals that there are substantial decreases in observed heterozygosity that result from smaller overall population sizes and fertility control use, then ongoing monitoring of genetic diversity would allow BLM to detect those and introduce new animals from other HMAs. Introduction of new horses to the herd would allow for maintaining an observed heterozygosity at levels that should prevent undue risks of inbreeding. For a detailed discussion of the potential effects of PZP vaccine, GonaCon-Equine vaccine, IUDs, ad sex ratio manipulation, see Appendix C.

Cumulative Impacts Analysis

During the initial gather achieving a wild horse population at the mid AML level of 105 to 120 horses, not to exceed the high AML level would result in a population that is in balance with the available forage and natural resources on the range and would be in conformance with other land uses and values as described in the Grand Junction Field Office RMP. This population level would also provide for a genetically stable and healthy wild horse population, which could be augmented through introduction of additional wild horses if genetic monitoring indicates that would be needed to maintain desired levels of observed heterozygosity.

Alternative C – No IUD or Sex Ratio Adjustments

Direct and Indirect Effects

Effects of Alternative C are expected to be comparable to those of the Proposed Action, with the exception that there would be no effects of IUDs, as those are not included as a fertility control method in Alternative C. For a given level of animal gathers and handling, the resulting population growth rate may be marginally higher under Alternative C than under Alternative B. Another way to interpret that is to achieve the same level of annual herd growth rate, a slightly greater number of animals may need to be gathered and handled or treated via dart with fertility control vaccine. This is in comparison to an alternative where flexible IUDs are included in the suite of fertility control methods (Appendix C).

Cumulative Impacts Analysis

During the initial gather achieving a wild horse population at the AML level of 90 to 104 horses not to exceed the high AML level would result in a wild horse population in balance with the available forage and water resources, that is more resilient to disturbance such as drought and wildfire. This population level would also be in conformance with the Free Wild Horse and Burro

Act, and other land uses and values as described in the Grand Junction Field Office Final EIS and Record of Decision, 2015. Additionally, this population level would provide for a genetically stable and healthy wild horse population, which could be augmented through introduction of additional wild horses if genetic monitoring indicates that would be needed to maintain desired levels of observed heterozygosity.

6. SUPPORTING INFORMATION

6.1 CONSULTATION AND COORDINATION

6.1.1 Tribal Consultation and Section 106 Consultation under the National Historic Preservation Act

Tribal consultation for the BLM is guided by a variety of laws, Executive Orders, and Memoranda, as well as case law. The GJFO is committed to and has conducted tribal consultation and NEPA scoping during the LBCWHR gather project process. Consultation and scoping are carried out at the government-to-government level. Tribal consultation is a separate process from public scoping, due to the unique relationship between the U.S. Government and federally recognized Tribes. Face-to-face meetings and emails are the primary methods of Tribal consultation.

The BLM initiated tribal consultation with the Ute Tribe of the Uintah and Ouray Reservation (UOR), the Ute Southern Ute Indian Tribe (SUIT), and the Ute Mountain Ute Tribe (UMUT) during BLM Colorado's biannual coordination meeting on April 9th, 2024. At that time, the representative for Ute Tribe requested additional details about the project, particularly in regard to 5ME.807. BLM sent additional information to the Tribes and sent consultation letters on April 17, 2024. BLM did not receive any responses from the Tribes.

Generally, similar projects in the past have not risen to a level requiring consultation with the Colorado State Historic Preservation Officer (SHPO). Projects with little or no potential to adversely affect historic properties are reported to the SHPO annually, pursuant to Section X.F.5 of the State Protocol Agreement between the Colorado State Director of the BLM and the Colorado SHPO. If all on-the-ground components of the Proposed Action overlap with previous surface disturbance and/or areas previously inventoried for cultural resources at the Class III level, this project would be exempt from consultation with the SHPO. Should ground activities occur in areas outside existing surface disturbance or adequate inventory coverage, such areas would be inventoried at the Class III level and/or monitored by an archaeologist and the results would form the basis of additional notification to, or further consultation with, the SHPO. If inventory, monitoring, or other fieldwork results in the identification of potential adverse effects to historic properties, project operations in the vicinity of the historic property in question must cease until consultation and any necessary mitigation is complete, followed by a notice to proceed from the BLM.

6.1.2 Other Consultation and Coordination Efforts

The BLM consulted with the Colorado Parks and Wildlife (CPW) office in Grand Junction. CPW shared concerns with fall gathers disrupting hunting activities in the project area. Overall, they are supportive of the gather and reducing the horse population in the LBCWHR.

6.2 LIST OF REVIEWERS

INTERDISCIPLINARY REVIEW

NAME	TITLE	AREA OF RESPONSIBILITY
Geoff Haymes	Archaeologist	Cultural Resources, Native American Religious Concerns
Dan Ben-Horin	National Conservation Land Specialist	Wilderness Study Area, VRM, Wilderness Characteristics
Chris Pipkin	Outdoor Recreation Planner	Access, Transportation, Recreation
Lynae Rogers	Wild Horse and Burro Specialist	Range, Vegetation, Wild Horse & Burro Act, and Realty
Marlin Deras	Natural Resource Specialist	Vegetation, Invasive, Non-Native Species
Jennifer Whittington	Geologist	Paleontology, Soils, Air Quality, Water Quality, Hydrology
Russell Knight	Wildlife Biologist	T&E Species, Migratory Bird Treaty Act, Terrestrial & Aquatic Wildlife
Anna Lincoln Anjelica Spencer	Ecologist	Land Health Assessment, Special Status Plants, Riparian and Wetlands
Ken Miller	Fire Ecologist Natural Resource Specialist	Fire Ecology, Fuels Management
Christina Stark	Assistant Field Manager (Resources Programs / Planning & Environmental Coordination)	Environmental Justice, Socioeconomics, ACECs, Environmental Review
Isaac Pittman	Assistant Field Manager	Range and Resource Program Supervisor

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