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Shinarump Allotment Grazing Permit Renewal

Coconino County, Arizona

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BLM

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List of Acronyms

AGFD	Arizona Game and Fish Department
AMP	Allotment Management Plan
AUM	Animal Unit Month
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CBW	Composition by Weight
DFC	Desired Future Condition
DPC	Desired Plant Community
DR	Decision Record
DWR	Dry Weight Rank
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GIS	Geographic Information System
GMU	Game Management Unit
IAT	Interdisciplinary Assessment Team
IBLA	Interior Board of Land Appeals
LHE	Land Health Evaluation
NEPA	National Environmental Policy Act
NOFD	Notice of Final Decision
NOPD	Notice of Proposed Decision
NRCS	Natural Resources Conservation Service
OHV	Off-Highway Vehicle
PNC	Potential Natural Community
PRIA	Public Rangelands Improvement Act
p.z.	Precipitation Zone
RMP	Resource Management Plan
TGA	Taylor Grazing Act
USFWS	U.S. Fish and Wildlife Service

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Chapter 1 – Purpose and Need

1.0 Purpose and Need

1.1 Introduction and Background

The Bureau of Land Management (BLM), Arizona Strip Field Office conducted evaluations for rangeland conditions on the Shinarump Allotment (Appendix A, Figure 1) in 2004 and 2021. The Interdisciplinary Assessment Team (IAT), during the Land Health Evaluation (LHE) process, recommended that resource conditions on the Shinarump Allotment were meeting the applicable Standards for Rangeland Health[1]. Current monitoring indicates that perennial grass composition is lower than desired, and sagebrush composition is higher than desired. Thus, the Desired Plant Community (DPC) objectives are not being met. Based upon this, the BLM has determined that the allotment is partially meeting this standard (rather than meeting standards, as was stated in the 2004 report). It is important to note that the monitoring data used to develop the 2004 LHE report noted similar compositions of grasses and shrubs. Land health on the allotment has not changed since 2004; instead, the BLM feels it is making a more accurate land health determination. A detailed discussion on the rangeland health in this allotment can be found in Section 3.3 and Appendix B of this environmental assessment (EA).

This EA has been prepared to disclose and analyze the environmental consequences of the proposed grazing permit renewal, as well as alternative livestock management, for the Shinarump Allotment. Livestock grazing on public lands is managed according to grazing regulations found in the Code of Federal Regulations (CFR) at 43 CFR Part 4100. The BLM is responsible for determining the appropriate levels and management strategies for livestock grazing in this allotment. This analysis provides information as required by the BLM implementing regulations for the National Environmental Policy Act (NEPA), the Taylor Grazing Act (TGA), and the Federal Land Policy Management Act (FLPMA) to determine whether to authorize grazing within this allotment, and whether changes to current management are necessary. This EA also serves as a tool to help the authorized officer make an informed decision that is in conformance with the Arizona Strip Field Office Resource Management Plan (RMP) (BLM 2008a). The action culminates an evaluation conducted on the allotment under the Arizona BLM Standards for Rangeland Health and Guidelines for Grazing Management. In addition, this EA determines if current grazing management practices would maintain desirable conditions and continue to allow improvement of public land resources, or whether changes in grazing management for the allotment is necessary. This EA is intended to evaluate the findings of the land health evaluation as it relates to vegetation conditions and resource values in the allotment. This is done to balance demands placed on the resources by various authorized uses within the allotment.

[1] The Desired Plant Community objectives were not met during the 2004 LHE process, due to high shrub (sagebrush) and tree composition are resulting in lack of grasses, forbs, and other shrubs. It is unclear why the 2004 LHE made the determination that all applicable standards for rangeland health were being met.

1.2 Purpose and Need

The BLM is proposing to fully process the term grazing permit on the Shinarump Allotment in accordance with all applicable laws, regulations, and policies. Because the existing grazing permit for the allotment was transferred on May 27, 2020, the BLM renewed the permit with the same terms and conditions pursuant to Section 402(c)(2) of FLPMA, pending compliance with applicable laws and regulations. Compliance with all applicable laws and regulations includes consultation, coordination and cooperation with affected individuals, interested publics, States, and Indian Tribes; completion of the applicable level of NEPA review; consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act, if applicable; and ensuring that the allotment is achieving or making significant progress toward achievement of land health standards and RMP objectives.

The need for this action is to respond to the permittee's request to renew the term grazing permit. BLM now intends to consider whether to renew, renew with modifications, or not renew the grazing permit, in accordance with those applicable laws and regulations. When issued, grazing permits must include appropriate terms and conditions designed to "achieve management and resource condition objectives for the public lands…and to ensure conformance with part 4180".

The purpose of this action is to provide for livestock grazing opportunities on public lands under the TGA and other applicable laws. BLM Arizona adopted the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management in 1997; these Standards for Rangeland Health were incorporated into the Arizona Strip Field Office RMP. Rangelands should be achieving or making significant progress towards achieving the standards and to provide for proper nutrient cycling, hydrologic cycling, and energy flow. Guidelines direct the selection of grazing management practices and, where appropriate, livestock facilities to promote significant progress toward, or the attainment and maintenance of, the standards. The RMP identifies resource management objectives and management actions that establish guidance for managing a broad spectrum of land uses and allocations for public lands in the Arizona Strip Field Office. The RMP identified public lands within the Shinarump Allotment as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP and Standards for Rangeland Health, allocation of forage for livestock use and the issuance of grazing permits to qualified applicants are provided for by the TGA and FLPMA.

The LHE update completed for the allotment identified Standard 1 as being met and Standard 3[2] as not being met on the allotment (see Section 3.3 and Appendix B).

The Arizona Strip Field Manager is the authorized officer responsible for the decisions regarding management of public lands within this allotment. Based on the results of the NEPA analysis, the authorized officer will issue a determination of the significance of the environmental effects and whether an environmental impact statement (EIS) would be required. If the authorized officer determines that it is not necessary to prepare an EIS, the EA will be deemed sufficient and will provide information for the authorized officer to make an informed decision whether to renew, renew with modifications, or not renew the permit and if renewed, what management actions, mitigation measures, and monitoring requirements will be prescribed for the Shinarump

[2] As described in Section 2.1.1 of this EA, Standard 2 does not apply in the Shinarump Allotment.

Allotment to ensure RMP objectives are achieved and the Arizona Standards for Rangeland Health are maintained.

1.3 Conformance with BLM Land Use Plan(s)

The alternatives described in Chapter 2 are in conformance with the Arizona Strip Field Office RMP, approved January 29, 2008 (BLM 2008a). The alternatives are consistent with the following decisions contained within this plan.

The following decisions are from Table 2.11 in the RMP regarding management of livestock grazing:

- **DFC-GM-01:** Healthy, sustainable rangeland ecosystems will be maintained or improved to meet Arizona's Standards for Rangeland Health (1997) produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and functional watersheds.
- **DFC-GM-02:** Livestock use and associated management practices will be conducted in a manner consistent with other resource needs and objectives to ensure that the health of rangeland resources is preserved or improved so that they are productive for all rangeland values. Where needed, public rangeland ecosystems will be improved to meet objectives.
- **LA-GM-01:** All allotments will continue to be classified as available for grazing by livestock under the principle of multiple use and sustained yield, except where specifically noted.[3]
- **MA-GM-02:** Implementing the Arizona Standards for Rangeland Health will continue on all grazing allotments in accordance with established schedules and congressional requirements. The Arizona Standards for Rangeland Health and Guidelines for Grazing Management will apply to all livestock grazing activities. These guidelines address management practices at the grazing AMP-level and are intended to maintain desirable conditions or improve undesirable rangeland conditions within reasonable time frames.
- **MA-GM-03:** The interdisciplinary allotment evaluation process will continue to be used to provide specific guidance and actions for managing livestock grazing. Existing AMPs and other activity plans will be consistent with achieving the DFCs and standards for rangeland health. They will contain the site-specific management objectives, as well as actions, methods, tools, and appropriate monitoring protocols.
- **MA-GM-04:** Existing management practices and levels of use on grazing allotments will be reviewed and evaluated on a priority basis to determine if they meet or are making progress toward meeting the Arizona Standards for Rangeland Health. Appropriate and timely actions will be implemented to deal with those areas not meeting the standards.
- **MA-GM-05:** The allotment management categorization process will continue to be used to define the level of management needed to properly administer livestock grazing according to management needs, resource conflicts, potential for improvement, and BLM funding/staffing constraints. The allotment categories are Custodial, managed custodially to

[3] No restrictions are associated with the Shinarump Allotment.

protect resource conditions and values; Maintain, managed to maintain current satisfactory resource conditions and are actively managed to ensure that the condition of resource values do not decline; and actively managed to improve unsatisfactory resource conditions.

- **MA-GM-07:** Allowable use on key forage species is 50% on allotments with rotational grazing systems, except in tortoise habitat. On allotments in desert tortoise habitat or being less intensively managed, then utilization is set at 45%[4].
- **MA-GM-08:** Any hay or other feed used in administering the livestock operation will be certified weed-free.

The allotment analyzed in this EA is classified as available for grazing under the RMP. The alternatives would meet these land use plan decisions. It has also been determined that the alternatives would not conflict with other decisions throughout the RMP.

1.4 Relationship to Statutes, Regulations, or Other Plans

The authority to renew grazing permits is provided for in 43 CFR 4100 where the objectives of the regulations are "....to promote healthy, sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions; to promote the orderly use, improvement and development of the public lands; to establish efficient and effective administration of grazing of public rangelands; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands" (43 CFR 4100.0-2). The alternatives comply with 43 CFR 4100.0-8 which states, in part, "The authorized officer shall manage livestock grazing on public lands under the principle of multiple use and sustained yield, and in accordance with applicable land use plans." The alternatives also comply with 43 CFR 4130.2(a) which states, in part, "Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans".

The alternatives are consistent with the Fundamentals of Rangeland Health (43 CFR 4180.1) and Arizona's Standards and Guidelines, which were developed through a collaborative process involving the Arizona Resource Advisory Council and the BLM State Standards and Guidelines team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. These standards and guidelines address watersheds, ecological condition, water quality, and habitat for special status species. These resources are addressed later in this document.

The regulations at 43 CFR Part 10 specifically require land use authorizations, including leases and permits, to include a requirement for the holder of the authorization to notify the appropriate Federal official immediately upon the discovery of human remains and other items covered by the Native American Graves Protection and Repatriation Act (see 43 CFR 10.4(g); the actual requirement for persons to notify the Federal agency official and protect the discovery is in 43 CFR 10.4(b) and (c)). This requirement has been incorporated into the alternatives.

[4] The Shinarump Allotment does not have a rotational grazing system, so maximum utilization is set at 45%.

Executive Order 13186 requires the BLM and other Federal agencies to work with the USFWS to provide protection for migratory birds. Implementation of the alternatives is not likely to adversely affect any species of migratory bird known or suspected to occur on the allotment. No take of any such species is anticipated**.**

The subject allotment is in Coconino County, Arizona. The alternatives are consistent with the *Coconino County Comprehensive Plan* (adopted December 15, 2015). While livestock grazing is not specifically addressed in the Coconino County General Plan, this action does not conflict with decisions contained within the Plan.

In addition, the alternatives would comply with the following laws and/or agency regulations, other plans and is consistent with applicable Federal, state, and local laws, regulations, and plans to the maximum extent possible.

- Taylor Grazing Act of 1934
- Federal Land Policy and Management Act of 1976 (43 U.S. Code 1701 et seq.)
- Public Rangelands Improvement Act (PRIA) of 1978
- Endangered Species Act of 1973, as amended
- 43 CFR 4100 Grazing Administration – Exclusive of Alaska
- Arizona Water Quality Standards, Revised Statute Title 49, Chapter II
- Section 106 of the National Historic Preservation Act of 1966, as amended
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S. Code 3001-3013; 104 Stat. 3048-3058)
- National Environmental Policy Act (NEPA) of 1969.

1.5 Identification of Issues

Identification of issues for this assessment was accomplished by considering the resources that could be affected by implementation of one of the alternatives. These issues were identified during the scoping meeting held on January 29, 2002, and field visit to the allotment held on May 17, 2002 (see Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Shinarump)[5] (BLM 2004), as well as through the public review process for this grazing permit renewal EA. The issues identified through the process described above are:

- Livestock grazing – permit renewal is required to allow continued livestock use on this allotment.
- Soils – the potential exists for impacts to soil quality or health in the allotment if proper livestock grazing practices are not followed.
- Vegetation – the potential exists for deterioration in ecological condition in the allotment if proper livestock grazing practices are not followed.
- Wildlife (including big game, sensitive species and migratory birds) – habitat for these species, and their prey, may be impacted if proper livestock grazing practices are not followed.

[5] The Shinarump Allotment evaluation report is available at the Bureau of Land Management's Arizona Strip Field Office, 345 E. Riverside Drive, St. George, Utah 84790.

Chapter 2 – Description of Alternatives

2.0 Description of Alternatives

2.1 Introduction

NEPA and its implementing regulations require that an agency rigorously explore and objectively evaluate a reasonable range of alternatives. Reasonable alternatives are those that meet the purpose and need for action and that are feasible to implement, taking into consideration regulatory, technical, economic, environmental, and other factors. The BLM interdisciplinary team explored and evaluated several different alternatives to determine whether the underlying need for the proposed action – providing for livestock grazing opportunities on public lands while ensuring that the allotment is achieving or progressing toward meeting land health standards. This EA focuses on three alternatives, issue a new ten-year grazing permit with a change of season of use, a no grazing alternative, and no action (renew grazing permit with current terms and conditions).

2.2 Management Common to All Alternatives

The regulations at 43 CFR Part 10 specifically require land use authorizations, including leases and permits, to include a requirement for the holder of the authorization to notify the appropriate Federal official immediately upon the discovery of human remains and other items covered by the Native American Graves Protection and Repatriation Act (see 43 CFR 10.4(g); the actual requirement for persons to notify the Federal agency official and protect the discovery is in 43 CFR 10.4(b) and (c)). This requirement is incorporated as a term and condition of any grazing permit that would be issued.

2.2.1 Arizona Standards for Rangeland Health

The allotment would be managed to achieve the following objectives, as described in the Arizona Standards for Rangeland Health (BLM 1997):

1) Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).
2) Riparian and wetland areas are in properly functioning condition.[6]
3) Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

2.2.2 Desired Plant Community

The Shinarump Allotment would be managed to achieve the DPC objectives developed for this allotment and included in the LHE. The Shinarump Allotment LHE was completed on September 10, 2004. The LHE listed DPC objectives that were developed by consulting the Natural Resource Conservation Service's (NRCS) ecological site guides; the potential vegetation

[6] This standard does not apply in the Shinarump Allotment. As stated in Table 3.1 of this EA, there are no wetland/riparian areas in the allotment.

types for each ecological site are determined primarily by soil type, which is determined by parent material, time, climate, relief and organisms. Many factors influence changes or differences in frequency or composition of vegetation as shown in these ecological site guides. It is important to note that the ecological site guides are just that – they are "guides". Long-term monitoring of a site indicates what an area is capable of producing. The DPC objectives therefore reflect the potential of each site. The DPCs are expressed in species composition by weight (CBW).

The DPC objectives for the allotment were developed using the description of the ecological site guides for the key area, as well as the potential of the site based upon long-term monitoring (see Appendix B). The DPCs reflect functional groups rather than specific plant species. Plant functional types are sets of plants exhibiting similar responses to environmental conditions and having similar effects on the dominant ecosystem processes (Gitay and Noble 1997). It is difficult to manage large areas, such as a grazing allotment, for specific species because variations within such a large area can be quite dramatic (even within a single ecological site). By contrast, managing by functional groups allows rangeland managers to study patterns of vegetation responses from plant groups that have similar life history and responses to environmental stress and disturbance (McIntyre 1999), which is more useful on an allotment scale. These DPCs provide for the habitat needs of wildlife (both forage and cover), protection for soils and hydrologic functions, and forage for livestock.

The DPC objectives for Shinarump Allotment (Ecological Site: Loamy Upland 10-14" p.z.) are:

- Increase grasses to between 70 and 80 percent.
- Maintain forbs between 1 and 5 percent.
- Decrease trees and shrubs to a range of 15 and 20 percent.

These objectives are contingent on the completion of pinyon-juniper and sagebrush reduction treatments. As described in the LHE update in Appendix B, pinyon-juniper occupies approximately 80 percent of the allotment, some of these areas in near monocultures. Intermingled with the pinyon-juniper are also large open areas vegetated mostly by sagebrush and perennial grasses. The high composition of woody species (pinyon-juniper and sagebrush) results in a lack of grasses, forbs, and palatable shrubs, which is not the best possible plant community structure. Reducing pinyon-juniper and sagebrush density in areas where it exceeds objectives would release desirable browse species (such as cliffrose and Mormon tea) and grass species so that the DPC objectives could be met. The current ecological condition is mid seral with grasses at 50.2 percent and shrubs at 49.8 percent. (See further discussion on land health in this allotment in Section 3.3 and Appendix B.)

2.2.3 Monitoring and Adaptive Management

The alternatives considered in this EA include adaptive management, which provides management options that may be needed to adjust decisions and actions to meet desired conditions as determined through monitoring. Adaptive management is a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of

these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. BLM resource specialists would periodically monitor the allotment over the 10-year term of the grazing permit to ensure that the fundamentals or conditions of rangeland health are being met or making progress towards being met, in accordance with 43 CFR 4180 (see Section 4.3.5 of this EA). If monitoring indicates that desired conditions are not being achieved and current livestock grazing practices are causing non-attainment of resource objectives, livestock grazing management of the allotment would be modified in cooperation with the permittee. Adaptive management allows the BLM to adjust the timing, intensity, frequency and duration of grazing; the grazing management system; and livestock numbers temporarily or on a more long-term basis, as deemed necessary. For example, drought conditions, fire, or flood events could require adaptive management adjustments to be made. If a permittee disagrees with the BLM's assessment of the resource conditions or the necessary modifications, the BLM may nevertheless issue a Full Force and Effect Grazing Decision to protect resources.

2.2.4 Range Improvements

The LHE for this allotment did not indicate the need for new range improvements. Water distribution is an issue on this allotment, but no water developments are proposed under any of the alternatives. Existing range improvements would be maintained as currently permitted. Any new range improvement(s) proposed in the future to assist in grazing practices and promote rangeland health would be considered through a separate NEPA process.

2.3 Alternative A – Issue New Ten-Year Grazing Permit with Change to Season of Use.

Under this alternative, a new ten-year term grazing permit would be issued for the Shinarump Allotment with the same terms and conditions as the current permit, which was renewed under the authority of Section 402(c) of FLPMA pending full processing of a new permit (as described in Section 1.2). Specifically, under this alternative the BLM would:

- Cancel the existing grazing permit and issue a new grazing permit for the Shinarump Allotment for a period of ten years.
- Change the season of use from July 1 – October 30 to November 15 – March 15
- Maintain the current 17 head of cattle and the 42 active AUMs.

Table 2.1. Alternative A – Proposed Change to Season of Use

Kind of Livestock	Numbers	Season of Use	Active AUMs	Suspended AUMs	Public Land Acres	% Federal Land
Cattle	17	Nov 15 – Mar 15	42	1	1,100	61%

- Allowable use on key forage species on the allotment will be no more than 45% utilization of current year's production, removed through grazing or other loss. The BLM will assess resource conditions through field inspections and determine, in consultation with the permittee, whether management changes (e.g., changes in livestock numbers, adjustment of move date,

or other changes or use within the parameters identified under this alternative) may be implemented prior to reaching maximum utilization. Move dates (i.e., removal of livestock from the allotment) may be adjusted if monitoring indicates maximum utilization has been reached or due to unusual climatic conditions, fire, flood, or other acts of nature. If maximum utilization is reached on key species/areas in the allotment before the scheduled move date, the use of salt, herding, or other management options may be used to distribute livestock away from an area where maximum utilization has been reached, or livestock may be removed from the allotment (after consultation with the permittee), as deemed necessary by the BLM.

- Achieve the DPC objectives listed in Section 2.2.2 of the EA.

2.4 Alternative B – No Grazing

Alternative B is to reissue a ten-year term grazing permit on the Shinarump Allotment with 0 authorized AUMs for active preference – the 42 AUMs that are currently active would be suspended (i.e., livestock grazing would be deferred for the ten-year permit period).

2.5 Alternative C – No Action (Renew Grazing Permit with Current Terms and Conditions)

Under this alternative, a new ten-year term grazing permit would be issued for the Shinarump Allotment with the same terms and conditions as the current permit, which was renewed under the authority of Section 402(c) of FLPMA pending full processing of a new permit (as described in Section 1.2). Specifically, under this alternative the BLM would:

- Cancel the existing grazing permit and issue a new grazing permit for the allotment for a period of ten years. This alternative proposes no change in season of use from that on the current permit (July 1 – October 30). Livestock grazing would occur during the season of use, and with the number of AUMs limited to the current active preference (Table 2.2).

Table 2.2. Alternative C – No Action, Current Grazing Use

Kind of Livestock	Numbers	Season of Use	Active AUMs	Suspended AUMs	Public Land Acres	% Federal Land
Cattle	17	July 1 – Oct 30	42	1	1,100	61%

Chapter 3 – Affected Environment

3.0 Affected Environment

3.1 Introduction

This chapter provides information to assist the reader in understanding the existing situation and current grazing management on the Shinarump Allotment. The affected environment is tiered to the Arizona Strip Proposed RMP/Final EIS (BLM 2007). This EA also incorporates by reference the Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Shinarump (BLM 2004). This assessment describes the resources and issues applicable to the allotment.

The affected environment of this EA was considered and analyzed by an interdisciplinary team. Table 3.4 addresses the elements and resources of concern considered in the development of this EA; this table indicates whether the element/resource is not present in the project area, present but not impacted to a degree that requires detailed analysis or present and potentially impacted. The resources discussed in Section 3.4 include the relevant physical and biological conditions that may be impacted with implementation of the alternatives and provides the baseline for comparison of impacts described in Chapter 4.

3.2 General Setting

The Arizona Strip is comprised of 2.8 million acres of BLM-administered land in the northwestern portion of Arizona. The Shinarump Allotment (Appendix A, Figure 1) is located in Coconino County, Arizona on lands managed by the BLM's Arizona Strip Field Office. The Shinarump Allotment is located above the Shinarump Cliffs, directly south of the Utah - Arizona border. The allotment is approximately five miles southeast of Kanab Utah. The allotment lies outside of Grand Canyon-Parashant and Vermilion Cliffs National Monuments.

3.2.1 Topography

The Shinarump Allotment consists of rolling grass and sage flats mixed with dense and semi dense pinyon and juniper stands that are typical throughout the area. Elevation ranges from 5,000 to 5,500 feet. There are several steep canyons that are on the west side of the allotment, and the southern border of the allotment is a rim of cliffs.

3.2.2 Climate

The climate in the area of the Shinarump Allotment is characterized by low rainfall (approximately 10.89 inches annually), mild winters, and warm summers. Temperatures in the region average 30 degrees in winter and 80+ degrees in summer. The climate at the allotment has an average frost-free period of 160 days with temperatures ranging from a high of 105°F in summer to a low of 10°F in winter. Precipitation data on the allotment is taken from the Winter Road rain gauge located southeast of the allotment boundary. A breakdown of average precipitation by season for this rain gauge is presented in Table 3.1.

Table 3.1. Shinarump Allotment Precipitation Data

Rain Gauge	Fall Average		Winter Average		Spring Average		Summer Average		Annual Average	Annual % normal
	Percent of total	Inches	Percent of total	Inches	Percent of total	Inches	Percent of total	Inches	Inches	Annual percent
Winter Road	17.1	1.86	31.9	3.47	19.3	2.11	31.7	3.45	10.89	64%

Precipitation in Arizona typically occurs in a bimodal fashion, with a very dry May and June. Winter moisture is influenced by Pacific oceanic temperatures and airstreams; summer moisture is influenced by the North American monsoon. Summer moisture generally occurs from July through September. It should be recognized that summer rainstorms exhibit considerable variability in their location and intensity (Sprinkle et al. 2007).

Precipitation over the last 25 years has been at or above normal[7] for 14 of those years at the Winter Road rain gauge and below normal 11 of those years. The highest precipitation received during that time period was in 2005 when annual precipitation was 141% of normal; the lowest was in 2002 when precipitation was 61% of normal. In 2020, we received below average annual precipitation (64% of normal). 2020 precipitation resulted in very dry conditions during the growing season as most of the moisture fell in the winter and the fall and was evaporated by the time the growing season hit. Only a quarter inch of precipitation fell during the summer months. In 2019, the Winter Road rain gauge received 64% of average precipitation with 2021 being dry but receiving seasonal rains for forage production, resulting in conditions having improved greatly due to timing of the precipitation. It should be noted that departures from normal are not unusual – in fact, departures from normal are quite typical (Doswell 1997), and precipitation may very often be either well above or well below the seasonal average (National Drought Mitigation Center 2015).

3.3 Land Health Evaluation

The BLM regularly conducts inventories and assessments of natural resource conditions on public lands. The need for natural resource inventories was established in 1976 by Congress in Section 201(a) of FLPMA and reaffirmed in 1978 in Section 4 of PRIA. These Acts mandate that the Federal agencies develop and maintain inventories of range conditions and trends on public rangelands and update inventories on a regular basis.

Rangeland landscapes are divided into ecological sites for the purposes of inventory, evaluation, and management. An ecological site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. It is the product of all the environmental factors responsible for its development. Within each precipitation zone, ecological sites are classified based on the

[7] "At or above normal" for this analysis is considered 95% of average annual precipitation or greater.

differences in site factors (soil, slope, aspect, parent material, topographic potential, etc.) that affect the potential to produce vegetation.

Ecological sites have developed a characteristic kind and amount of vegetation. The natural plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in annual production (BLM 2001). While the natural plant community of a particular ecological site is recognized by characteristic *patterns* of species associations and community structure, the *specific species* present from one location to another may exhibit natural variability - the natural plant community is not a precise assemblage of species for which the proportions are the same from place to place, or even in the same place from year to year. Variability is the rule rather than the exception. The distinctive plant communities associated with each ecological site (including the variability which frequently occurs) can be identified and described and are called ecological site descriptions.

The BLM measures range condition, or ecological condition, by the degree to which the existing vegetation of a site is different from the Potential Natural Community (PNC) for the respective ecological site, as identified in the ecological site description. PNC is "the biotic community that would become established if all successful sequences were completed without interferences by humans under the present environmental conditions. It may include naturalized non-native species" (BLM 2005 and BLM 2001). This differs from "historic climax plant community" in that an historic climax plant community is "the plant community that existed before European immigration and settlement" (BLM 2001). The BLM uses "potential natural community" terminology rather than "historic climax plant community" because PNC recognizes past influences by man. Knowing the PNC of the area, and using the ecological site descriptions as a guide, DPC objectives can be developed. The DPC then becomes the objectives by which management actions would be measured (see Section 2.2.2).

Ecological condition expresses the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the potential natural plant community for the site. Ecological condition for most of the sites in this area change slowly. Ecological condition is reported in the following four classes, or seral stages, which are the developmental stages of ecological succession:

- **Early Seral:** 0-25% of the expected potential natural community exists.
- **Mid Seral:** 26-50% of the expected potential natural community exists.
- **Late Seral:** 51-75% of the expected potential natural community exists.
- **Potential Natural Community or PNC:** 76-100% of the expected potential natural community exists.

In 2004, a LHE was conducted for this allotment, and an evaluation report was completed that same year (BLM 2004). This evaluation was made in accordance with the Arizona Standards and Guidelines for the Fundamentals of Rangeland Health (BLM 1997) and standard BLM methods for estimating ecological condition and current trend. Attempting to monitor 100% of any given rangeland is not physically possible. Instead, representative study sites are selected based on their ability to predict range conditions over much larger areas (University of Arizona 2010). Evaluation sites, or key areas as defined in Technical Reference 1734-4 (BLM 1999a),

were selected (location and amount) using professional judgment based upon terrain, past uses of the area, and location of waters. Specific locations of key areas are available in the project file. Existing trend studies, ecological condition data, actual use, and utilization studies for the allotment was analyzed. The trend identified in the rangeland health assessment survey assessed erosion status, vegetative cover, vigor, species diversity, location of the most palatable plants in relation to access to a grazing animal, and general age classes. The LHE identified trend over a wider area within the ecological site surveyed than the 3- foot x 3-foot and 5-foot x 5-foot areas the monitoring studies represent.

Additional monitoring (pace-frequency and utilization) data has been collected since the LHE report was completed. Utilization monitoring was conducted at the key area in 2012, 2014, 2016, 2017, 2018, and 2019. As shown in Table 3.2, utilization at the key area has been light. Additional utilization data (1984-1999) can be found in the LHE (BLM 2004) – that data also indicates utilization well below the maximum allowable.

Table 3.2. Shinarump Allotment Recent Utilization Percentages of Key Species

Key Area	Species	2012	2014	2016	2017	2018	2019
#2	Grasses	50%	44%	30%	30%	20%	11%
	Shrubs	32%	30%	6%	8%	6%	7%
	Average all species	**49%**	**39%**	**22%**	**22%**	**15%**	**10%**

The key area was most recently read for pace-frequency, trend, and dry weight ranking (DWR) in 2017 and 2018 (since the 2004 LHE was completed) – trend monitoring is conducted every five years. Based on frequency data, trend is not apparent at the Key Area #2 as it has only been established since 2017[8].

Most of the public lands within the Shinarump Allotment are in mid seral, or fair ecological condition. Table 3.3 lists key area, ecological site, and current ecological status. Also listed is the current trend of the vegetation based on pace-frequency studies.

Table 3.3. Shinarump Allotment Vegetation Characteristics

Pasture	Key Area	Ecological Site	Ecological Status	Trend
Shinarump	#2	**Loamy Upland 10-14" P.Z.**	**(Mid Seral)**	Not apparent

Based on analyses of the allotment monitoring data and supporting documentation contained in the LHE report (BLM 2004) and the 2021 evaluation update (Appendix B), including achievement of DPC objectives, resource conditions on the allotment meet Standard 1 (Upland Sites) and partially meet Standard 3 (Desired Conditions).

[8] The trend plot was destroyed either by flash flooding or by vandals and its location has not been able to be relocated. As a result, data was collected only one time before the trend plot was destroyed; the plot has since been re-established.

3.4 Elements or Resources of the Human Environment

The BLM is required to consider many authorities when evaluating a federal action. Those elements of the human environment that are subject to the requirements specified in statute, regulation, or executive order, and must be considered in all EAs (BLM 2008b) have been considered by BLM resource specialists to determine whether they would be potentially affected by any of the alternatives. These elements are identified in Table 3.4, along with the rationale for determination on potential effects. If any element was determined to potentially be impacted, it was carried forward for detailed analysis in this EA. If an element is not present or would not be affected, it was not carried forward for analysis. Table 3.4 also contains other resources that have been considered in this EA. As with the elements of the human environment, if these resources were determined to be potentially affected, they were carried forward for detailed analysis.

Table 3.4 Elements/Resources of the Human Environment

NP = not present in the area impacted by any of the alternative
NI = Present, but not affected to a degree that detailed analysis is required
PI = Present with potential for impact – analyzed in detail in the EA

Resource	Determination	Rationale for Determination
Air Resources	NI	The Shinarump Allotment is included in an area that is unclassified for all pollutants and has been designated as Prevention of Significant Deterioration Class II. Air quality in the area is generally good. Exceptions include short-term pollution (particulate matter) resulting from vehicular traffic on unpaved roads. Fugitive dust is also generated by winds blowing across the area, coming from roads and other disturbed areas. Moving livestock can produce small amounts of fugitive dust in the short term, but this would cause negligible and localized impacts on air quality. The alternatives would therefore not impact air quality standards. Cattle grazing on public land (and elsewhere) eat vegetation that potentially stores carbon, and cattle do generate methane. In addition, livestock operations have the potential to generate emissions through vehicle and equipment use. The proposed action would be a minute source of carbon dioxide (CO_2) and other greenhouse gases (GHGs). This analysis is unable to identify the specific impacts of the proposed action's GHGs on global warming and climate change because there is insufficient information, and there are numerous models that produce widely divergent results. It is difficult to state with any certainty what impacts may result from GHG emissions, or to what extent the proposed action could contribute to those climate change impacts. It has therefore been determined that the proposed action would have a negligible effect on local, regional, and global climate change.
Areas of Critical Environmental Concern	NP	There are no Areas of Critical Environmental Concern within this grazing allotment.

Environmental Justice	NI	Minority, low-income populations, and disadvantaged groups may be present within the county and may use public lands within and around the Shinarump Allotment. The alternatives would not cause any disproportionately high and adverse effects on minority or low-income populations, individually or collectively because there are no exposure pathways by which any population would come into contact with environmental or health hazards that would result in chemical, biological, physical, or radiological effects.
Farmlands (Prime or Unique)	NP	Prime farmland is described as farmland with resources available to sustain high levels of production. In the southwest, it normally requires irrigation to make prime farmland. In general, prime farmland has a dependable water supply, a favorable temperature and growing season, acceptable levels of acidity or alkalinity, an acceptable content of salt and sodium, and few or no rocks. Based on these definitions, no prime or unique farmlands exist within the Shinarump Allotment or anywhere within the Arizona Strip Field Office
Floodplains	NI	No actions are proposed that result in permanent fills or diversions or placement of permanent facilities in floodplains or special flood hazard areas. Continued properly managed livestock grazing use would not affect the function of the floodplains within the allotment.
Native American Religious Concerns	NI	The alternatives are not expected to limit access to or ceremonial use of Native American sacred sites, or significantly adversely affect the physical integrity of such sacred sites – the action is a grazing permit renewal; as such, there would be no adverse impact.
Threatened, Endangered or Candidate Plant Species	NP	No Threatened, Endangered, or Candidate plant species occur in the allotment.
Threatened, Endangered or Candidate Animal Species	NI	There are no areas within the Shinarump Allotment that lie within any critical habitat that has been designated or proposed under the Endangered Species Act (ESA). The California condor is the only known federally listed animal species that may occur within this allotment – condors may occasionally fly over or feed in this allotment at any time of year. California condors are federally listed as endangered and a population of these condors was reintroduced on the Arizona Strip in 1996. This population is designated as experimental non-essential under Section 10(j) of the Endangered Species Act. Condors are strictly scavengers and prefer to eat large, dead animals such as mule deer, elk, pronghorn, bighorn sheep, cattle, and horses. Condors range widely, easily covering over 100 miles in a day, and their current range includes the entire Arizona Strip. Although condors may either fly over or feed within the allotment, they have not been observed doing so. There is no evidence that rangeland health on this allotment is limiting or restricting condor population growth. Thus, no effect to this species is expected from any of the alternatives.

Cultural Resources	NI	Livestock grazing has continued as an historic use of the public land in this allotment for over 100 years. The BLM would manage the allotment to ensure that livestock grazing would continue to be in compliance with Section 106 of the National Historic Preservation Act (36 CFR 800.3). Cultural resources project files (CRPR AZ-BLM-010-2020-51) contain documentation of compliance with Section 106 of the National Historic Preservation Act. New range improvement actions, including fences, water facilities, and vegetation treatments, are subject to a Class III cultural resources inventory. No new range improvements are proposed under any alternatives analyzed in this EA. In addition, the regulations at 43 CFR 10.4 require land use authorizations, including permits, to include a requirement for the holder of the authorization to stop all work and notify the appropriate federal official immediately upon the discovery of human remains and other items covered by the Native American Graves Protection and Repatriation Act (24 USC 3001 et seq., 43 CFR 10). This requirement would be included as a term and condition on the grazing permit. The renewal of grazing permit, in the absence of any construction of new range improvements, therefore, does not constitute a potential adverse effect to cultural resources.
Invasive, Non-native Species	NI	Some Scotch thistle has occurred around the boundary with the Brown and Shumway Allotment. This infestation has been treated and continues to be monitored on a yearly basis. If any residual seeds germinate, they are promptly treated. Frequent inspections and monitoring will continue which will reveal any need to retreat and control as necessary. Cheatgrass is present in some areas across the Shinarump Allotment, although at low levels and is not out-competing native vegetation on the allotment. Cheatgrass is not on the Arizona Noxious Weed list. However, it can be a very invasive non-native grass species. Research by Douglas et al. (1990) and Hunter (1991) shows that cheatgrass readily invades areas that have not been disturbed and do not have livestock influence. Young and Clements (2007) speculated that removal of livestock would actually accelerate conversion to cheatgrass because of increased fuel accumulations and more frequent wildfires. Proper range practices can help prevent the spread of undesirable plant species (Sheley 1995). Sprinkle et al (2007) found that grazing exclusion does not make vegetation more resistant to invasion by exotic annuals. Reasons for this may include: 1) grazing may result in a more diverse age classification of plants due to seed dispersal and seed implementation by grazing herbivores, and 2) grazing removes senescent plant material, and if not extreme, helps open up the plant basal area to increase photosynthesis and rainfall harvesting

		(Holechek 1981). Loeser et al. (2007) reported that moderate grazing was superior to both grazing exclusion and high-impact grazing in maintaining plant diversity and in reducing exotic plant recruitment in a semiarid Arizona grassland. It is also important to note that removal of grazing by domestic livestock does not automatically lead to disappearance of cheatgrass (Young and Clements 2007). Proper grazing use which maintains stable plant communities (as is the case in the Shinarump Allotment – the majority of the public lands within the allotment are in mid-seral, which is a stable condition) should minimize or have no effect on the spread of invasive non-native species. The renewal of the grazing permit and continued livestock grazing are therefore not anticipated to increase the rate at which invasive species are spread throughout the area.
Wastes (hazardous or solid)	NI	No known hazardous or solid waste issues occur in this allotment, and the alternatives would not produce hazardous or solid waste. While motorized vehicles (used by the permittee for grazing management activities) involve use of petroleum products, which are classified as hazardous materials, there is nothing unique about the actions associated with the alternatives which could affect their use or risks associated with their use. No chemicals subject to reporting under Superfund Amendments and Reauthorization Act, Title III in an amount equal to or greater than 10,000 pounds would be used, produced, stored, transported, or disposed of annually in association with any of the alternatives. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, would be used, produced, stored, transported, or disposed of in association with any of the alternatives.
Water Quality (drinking / ground)	NI	Site visits to the allotment (during the LHE process, as well as subsequent monitoring) did not indicate that current livestock use is altering water quality – no surface water within this allotment is used for domestic drinking water. Thus, no effect to water quality is expected from the alternatives.
Wetlands / Riparian Zones	NP	No wetland/riparian areas occur in the allotment.
Wild and Scenic Rivers	NP	There are no river segments within the allotment that are designated, eligible, or suitable as wild, scenic, or recreational under the Wild and Scenic Rivers Act.
Wilderness	NP	There is no designated wilderness within the Shinarump Allotment.
Livestock Grazing	PI	Permit renewal is required to allow continued livestock use on the allotment; this issue is therefore analyzed in detail in this EA.
Woodland / Forestry	NI	Continued livestock use would not affect the availability of, or access to, these resources.

Vegetation	PI	Grazing has a direct impact on vegetation resulting from the practice of grazing in which livestock eat and trample plants within the allotment. This issue is therefore analyzed in detail in this EA.
BLM or State Sensitive Plant Species	NP	There are no known BLM or state sensitive plant species within this allotment.
Wildlife (including sensitive species and migratory birds)	PI	Multiple sensitive animal species, including migratory birds, may occur within the Shinarump Allotment. Mule deer are the primary big game species known to occur throughout the allotment. Interactions with livestock and competition for forage could occur; this issue is therefore analyzed in detail in this EA.
Soil Resources	PI	Potential soil impacts from grazing include decreases in soil infiltration capacity from increased compaction in trailing, loading, and active grazing areas. This issue is therefore analyzed in detail in this EA.
Recreation	NI	This allotment currently receives little recreational use other than some occasional off-highway vehicle use. In the southern reaches of the allotment, a route has been laid out for developing a mountain bike trail along the Shinarump Cliffs. Continuing ranching use would not conflict with that the development of that trail.
Visual Resources	NI	The Shinarump Allotment is designated as Visual Resource Management Class III, where the changes to the landscape should not attract the attention of the casual observer. Continuing livestock grazing as analyzed under the alternatives would not affect visual resources because no new range improvements are proposed, so the existing character of the landscape would not change.
Geology / Mineral Resources / Energy Production	NI	There is no energy production on the Arizona Strip Field Office. A records search of LR2000 on August 18, 2020 found no leasable, salable or locatable authorizations and no active mining claims in the Shinarump Allotment. Continuing livestock grazing would not alter geological features or mineral resources. Mining activities (uranium, gypsum, and mineral materials) are occurring across the Arizona Strip, but grazing of livestock would not alter or impair the opportunities to explore for or mine these resources.
Paleontology	NI	The Potential Fossil Yield Classifications for Younger Alluvial Fan Deposits, Older Alluvial Fan Deposits and the Kaibab Formation (where the Shinarump Allotment is located) are low, unknown, and moderate, respectively. The potential for significant fossils is low. No paleontological resources are known to occur in the allotment.
Lands / Access	NI	Access to public lands would not be altered or impaired by implementation of the alternatives. No other land issues have been identified in connection with the alternatives.
Fuels / Fire Management	NI	No hazardous fuel reduction or fuels management projects are proposed for the area. Continued livestock use would not affect fire management, other than the continued reduction of some light fuels through livestock grazing.
Socio-economic Values	NI	The economic base of the Arizona Strip is mainly ranching with a few gypsum/selenite and uranium mines. Nearby communities are

		supported by tourism (including outdoor recreation), construction, mining activities, and light industry. The social aspect involves remote, unpopulated settings with moderate to high opportunities for solitude. Issuance of the grazing permit would allow the permittee to continue his grazing operation with some degree of predictability during the 10-year period of the term permit and would allow an historical and traditional use of the land to be maintained. The alternatives would have no overall effect on the economy of the county since other industries and tourism/recreational uses are contributing increasing amounts to the economy of the region and cattle ranching is no longer a significant contributor. Quantifiable additional or decreased economic impact to the local area would not be affected by any of the alternatives.
Wild Horses and Burros	NP	There are no wild horses or burros, or herd management areas, within the allotment.
Lands Managed to Maintain Wilderness Characteristics	NP	There are no areas managed to maintain the wilderness characteristics of naturalness, opportunities for solitude, and opportunities for primitive and unconfined recreation within this allotment.

3.5 Resources Brought Forward for Analysis

3.5.1 Livestock Grazing

A grazing permit is issued for livestock forage produced annually on the public lands and is allotted on an AUM basis. (An AUM is a unit of measurement indicating how much forage is eaten by a cow/calf pair in one month.) The BLM does not control adjacent private lands owned by permit holder(s). The livestock operator assumes grazing management responsibility with the intent to maintain or improve existing resources. Livestock are to be grazed on public lands only during the established season of use. If private land is used during different periods, it is the permittee's responsibility to keep livestock off the public land during non-grazing periods. The BLM retains the right to manage the public lands for multiple uses and to make periodic inspections to ensure that inappropriate grazing does not occur. If inappropriate grazing should occur, then the BLM would work with affected permittee to identify and prescribe actions to be taken that would return the allotment to compliance.

The Shinarump Allotment is categorized as a "custodial" allotment. The Arizona Strip Field Office RMP (BLM 2008a) defines custodial allotments as those in which:

a) Present range condition is satisfactory.
b) The allotment has high or moderate resource potential and is producing much its potential (or trend is moving in that direction)
c) No serious resource-use conflicts/controversy exists
d) Opportunities may exist for positive economic return from public investments; and
e) Present management is satisfactory.

Land ownership in the Shinarump Allotment consists of federal land and state land (Table 3.5).

Active grazing use on the allotment is 42 AUMs, with 1 suspended non-use AUM.

Table 3.5 Land Ownership

Ownership	Shinarump Allotment
Federal	1,100 acres
State	463 acres
Private	0 acres
Total	1,563 acres

The grazing system on the Shinarump Allotment is a seasonal grazing system, with current use occurring July 1 – October 30. This grazing system does not provide rest for the allotment during the summer. There is also no rotational system as there is only one BLM pasture for this small allotment.

Actual use within the Shinarump Allotment has varied between 12 percent and 100 percent between 2015 and 2020. Non-use reflects seasonally dry periods, drought years or other factors.

Range Improvements

The Shinarump Allotment contains two structural range improvements. These range improvements consist of one fence on the state line boundary and a fence called Brown division fence. The only water that is available for the BLM portion of this allotment is found on adjacent private land controlled by the permit holder.

3.5.2 Soils

The Shinarump Allotment consists of the top and edge of a low plateau with outcrops of Shinarump conglomerate, Moenkopi mudstones and gypsiferous shales. Silty and clayey soils form small floodplains with a few small sandy fans dispersed through the allotment. Soils within the allotment are reflective of the diversity of climate, organisms, relief (slope ranges), parent material (geology), and landscape history (time) of the project area. Geographic Information System (GIS) software (ArcMap 10.4; Environmental Systems Research Institute) was used to compile much of the background information on soils, including their factors of formation, for this EA. Interpretations of the suitability, use, and management of these soils in relation to the alternatives are derived from the Web Soil Survey for the Vermilion Area, Arizona (NRCS 2021). Information on soils in the allotment is summarized in Table 3.6.

Table 3.6. Soil Map Units & Associated Compaction Risk/Resistance of the Shinarump Allotment

National Symbol	Map Unit Symbol	Map Unit Name	Acres	Proportion	Compaction Risk	Compaction Resistance
1t9z	4	Barx gravelly loam	219	12.0%	High	Low
1tbx	6	Bidonia-Rock outcrop complex	1163	63.8%	Medium	Low
1t8j	24	Manikan silty clay loam	47	2.5%	High	Low
1tb9	47	Torriorthents	59	3.2%	Not Rated	Not Rated
1tbd	48	Torriorthents-Rock complex	331	18.2%	Not Rated	Not Rated

Climate: As described in Table 3.1, the Shinarump Allotment receives just over 11 inches of precipitation annually, on average. The semi-arid nature of this region accounts for the dry soil conditions and their taxonomic classification as Aridisols and Entisols. Aridisols have an aridic soil moisture regime in which there is insufficient precipitation to leach soluble minerals from the soil profile (NRCS 2014). For this reason, salts and carbonate minerals such as gypsum accumulate in the soil profile and the desert vegetation adapted to grow on this soil type and precipitation regime are tolerant of these otherwise harsh conditions. The aridic soil moisture regime denotes soils that are dry in the plant rooting depth for more than 50% of the year and are "…. unsuitable for cultivation without irrigation" (NRCS 2015). The other main soil order represented in the allotment is Entisols; these weakly developed soils lack distinguishing characteristics and are considered "young" soils still in the early stages of soil formation as there is not enough precipitation to move water, minerals, and clay downward through the soil profile for most of the year.

Organisms: Flora and fauna responsible for soil properties on the Shinarump Allotment are primarily the mix of native and non-native grasses, forbs, shrubs, and tree species described in further detail in the "Vegetation" section of this EA. Soils with a diverse and robust mix of root sizes (ranging from larger tree and shrub roots to smaller/finer grass and forb roots) have higher function and productivity than counterparts that lack this vegetative component. Desert and semi-arid environments have vegetative cover that are naturally sparser relative to other ecosystems; as such, vegetative root density is inherently lower. Given this reality, soil organic matter is accordingly lower and ultimately translates to thinner topsoil (soil "A" horizon) in the allotment. Soil organic matter has an overriding influence on many soil properties, of which erosion and compaction-resistance are no exceptions. For the Shinarump Allotment, soil organic matter ranges from 0.25% to 0.75% of the weight of the soil surface (A) horizon; for context, soils of the organic-rich Histosol soil order are approximately 30% organic matter by weight. This paucity of soil organic matter, coupled with low rainfall and other soil limitations such as depth to bedrock and salt content accounts for relatively low vegetation production of most of the soils (ranging from 144 to 650 pounds per acre per year) within the allotment. One exception is Map Unit 79 (Tours silt loam, 1 to 3% slopes; this deep, floodplain deposited soil with higher fertility than the adjacent upland soils is rated at 2500 pounds of annual production for "normal" years (NRCS 2021).

Relief: Highly variable slope ranges and landforms characterize the Shinarump Allotment, similar to much of the Arizona Strip District. Low hills and mesas comprised of mudstones, sandstones, and gypsum-bearing strata of the Moenkopi Formation and Navajo sandstone are found on the allotment. The area is bound to the east by Toroweap sandstone. In between these bounding features are alluvial fans, stream terraces, and colluvial slopes with soils of similar heterogeneity. Soils are mapped in the "bottom" alluvial (stream, wash, terraces) area of low relief (1 to 3 percent slopes), grading towards steeper (35 to 70% slopes) hillsides and cliffs. Slope analysis conducted using 10-meter Digital Elevation Model analysis in GIS showed the mean slope of the allotment to be 15.1%, with a range of less than 1% in the valley bottoms and drainages to 200% (two feet of rise per foot of run) on cliff faces. These slope ranges affect both the distribution of slopes in terms of a relative lack of site stability for soils to develop on and the concentration of grazing on lower-sloped portions of the allotment.

Parent Material/Time: Geologic deposits of the allotment influence the distribution and properties of soils from which they form. The "Geologic Map of the Littlefield 30' x 60' Quadrangle, Mohave County, Northwestern Arizona" (Billingsley and Workman 2000) details young (Quaternary aged; 2.6 million to 11,000 years before present) wind, water, and gravity-deposited (fan, talus, valley fill) materials that culminate in the landforms and soilscapes of the allotment. Additionally, much older Permian (Kaibab Formation) and Triassic-aged (Moenkopie Formation) gypsum-bearing sedimentary rocks underlay and contribute to the formation of large percentages of the soils on the allotment. As stated previously, soils for the allotment are either Aridisols or Entisols. Soil orders are the broadest level of soil taxonomic classification and for the purpose of this analysis will be the main differentiation between soil types. The soil orders represented reflect the low-precipitation and low vegetative cover of the Shinarump Allotment. These soils are low in organic matter due to a lack of biomass inputs (root and leaf decay) and soil moisture. Conversely, these soil types are high in sodium, calcium, and/or sulfur salts (carbonates and sulfates) as desert conditions do not promote the leaching of these minerals down through the soil profile. Soil pH is accordingly high while fertility (nutrient levels) is low when compared to other soil orders.

Aridisols account for nearly 46% of the mapped soils for the spatial bounds of the Shinarump Allotment. Aridisols are soils formed in arid regions of the world and are pedogenically young compared to soils of similar age due to the lack of moisture and subsequent weathering. Aridisols are found on alluvial fans, fan remnants, mesas, plateaus, alluvial terraces, and valley bottoms. Geologic parent materials include sedimentary rocks including limestone and sandstone, igneous rocks such as basalt, and wind/water deposited materials. Most of the documented Aridisols that should occur in the allotment have thin topsoils, typically 1 to 3 inches thick over gypsum-rich subsoil.

Entisols comprise 54% of the mapped soil types. These young, "weakly developed" soils closely resemble the geologic strata or depositional material such as wind-blown sand or fluvial deposits from which they form (NRCS 2006). For the Shinarump Allotment, these are found on eroding hillsides of sedimentary rocks such as limestone, gypsiferous mudstones, sandstones, and alluvial (stream channel) deposits. Landscape instability and climatic factors combine to slow the development, and hence productivity, of these soil types.

Lithic soils are defined as those soils that feature a root-restricting layer such as bedrock at a depth of less than 50 centimeters (20 inches) from the soil surface (NRCS 2006). For the Shinarump Allotment, nearly one third (31.4%) of the soils are mapped as having a root-limiting layer within the depth criteria for shallow soils. This is one of the impediments to higher vegetation production for the allotment.

3.5.3 Vegetation

According to the NRCS, the dominant ecological site on the Shinarump Allotment is Loamy Upland 10-14" P.Z. Small inclusions of other ecological sites occur within the allotment. There are two principal vegetative types within the allotment – shrub-grassland and pinion-juniper woodland. Galleta is the predominant grass species throughout the allotment. Other

grasses present include sand dropseed, blue grama and squirrel tail. Indian ricegrass grows in minor amounts in the sandy areas of the allotment. The shrub-grassland vegetative type consists of fourwing saltbush, cliffrose, bitterbrush, Mormon tea, sagebrush, and forb species such as globemallow and desert trumpet.

Management of the allotment is based on a selection of key species. These species are selected for their similarity to other grasses and browse species that occur in the allotment. The definition of key species is: 1) forage species of sufficient abundance and palatability to justify its use as an indicator to the *degree of use* of associated species; and 2) those species which must, because of their importance, be considered in the management program (Jacoby 1974). Key species for this allotment are:

- Browse species – Mormon tea
- grasses – Galleta, Squirrel tail and Indian ricegrass

Phenological development stage dates of key species for the Shinarump Allotment are shown in Table 3.7.

Table 3.7. Phenological Development* of Key Species for the Shinarump Allotment

Key Species	Begin Growth	Flowering	Seed Ripe	Seed Dissemination
Mormon tea	5/01	7/20	9/15	10/01
Indian ricegrass	3/01	5/15	6/20	7/01-8/01
Squirreltail	3/1	5/15	6/20	7/01-8/01
Galleta	5/01	6/01	7/15-9/30	12/01

* Phenological development stage dates vary based upon yearly fluctuations in specific climatic conditions and elevation – these dates are only estimates.

3.5.4 Wildlife, Including Big Game, Migratory Birds, and Sensitive Species

3.5.4.1 Big Game

Mule Deer (Odocoileus hemionus)

Mule deer can be found throughout most of the Arizona Strip, including on the Shinarump Allotment. This allotment is within Arizona Game and Fish Department's (AGFD) Game Management Unit (GMU) 12B. This unit is primarily winter range for migratory deer from both the North Kaibab Plateau in Arizona and from the Paunsaugunt Plateau in southern Utah. Elevation ranges from 4,000 to 7,000 feet with vegetation consisting primarily of pinion-juniper and sagebrush flats. Studies have shown that the Paunsaugunt deer arrive in Unit 12B in mid-October through early November and occupy a range that extends southward into Arizona approximately eight miles. Deer from the North Kaibab begin migrating northward to merge with the Utah deer in early November. This annual migration pattern to lower elevations varies year-to-year and is heavily driven by snowfall or changing of the seasons (AGFD and BLM

2015). Mule deer are the primary big game species found on the Shinarump Allotment. Although no population estimates are available specifically for this allotment, the mule deer population in 12B is estimated to be at 4,137 after the most recent surveys conducted by AGFD in 2020 (AGFD 2020). Annual fawn production varies considerably from year to year. This variation is attributed to predation, annual differences in timing and amount of precipitation and subsequent forb production – during periods of drought, poor fawn survival results in low recruitment; conversely, during normal to above normal precipitation years, fawn survival and recruitment increases (Watkins et al. 2007).

Mule deer occur in a wide variety of habitat types; although vegetative communities vary throughout the range of mule deer, habitat is nearly always characterized by areas of thick brush or trees interspersed with small openings. The thick brush and trees are used for escape cover whereas the small openings provide forage and feeding areas. As described in Section 3.4.3, the two principal vegetative types within the allotment are shrub-grassland and pinion-juniper woodland. The shrub-grassland type consists of plant species such as galleta, squirreltail, Indian ricegrass, fourwing saltbush, cliffrose, bitterbrush, Mormon tea, sagebrush, and forb species such as globemallow and desert trumpet. Deer eat a wide variety of plants including browse, forbs, and grasses. Deer are especially reliant on shrubs for forage during critical winter months. Fawn production is closely tied to the abundance of succulent, green forage during the spring and summer months.

AGFD has categorized habitat characteristics for big game species within the state. Habitat categories for mule deer (i.e., limited, summer, summer crucial, winter crucial, and yearlong) are based on several factors such as topography, forage and cover, availability of water, and limiting factors such as prohibitive fencing. The Shinarump Allotment is within a Western US Big Game Priority Winter and Migration Area, as identified in Secretarial Order 3362. Most of the allotment is classified by AGFD as "limited" mule deer habitat with the very eastern edge and the adjacent allotment classified as "crucial winter range" (AGFD and BLM 2015).

3.5.4.2 Migratory Birds

The Migratory Bird Treaty Act of 1918 protects against the take of migratory birds, their nests, and eggs, except as permitted. An MOU between the BLM and USFWS states that the BLM shall: "At the project level, evaluate the effects of the BLM's actions on migratory birds during the NEPA process, if any, and identify where take reasonably attributable to agency actions may have a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. In such situations, BLM will implement approaches lessening such take." (BLM and USFWS 2010).

Executive Order 13186 requires the BLM and other federal agencies to work with the USFWS to provide protection for migratory birds. These species are protected by law and it is important to maintain habitat for these species so migratory patterns are not disrupted. All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), which prohibits the taking of any migratory birds, their parts, nests, or eggs unless specifically permitted by regulation. Additional protection is provided by the Neotropical Migratory Bird Conservation Act of 2000 (16 USC Chapter 80).

The USFWS is mandated to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act. The USFWS *Birds of Conservation Concern 2021* (USFWS 2021) is the most recent effort to carry out this mandate. Bird species considered as Birds of Conservation Concern include nongame birds, gamebirds without hunting seasons, ESA candidate, proposed, and recently delisted species. Birds of Conservation Concern found on the Arizona Strip within the habitat types on the Shinarump Allotment are summarized in Table 3.8.

Table 3.8. USFWS Birds of Conservation Concern Found in the Shinarump Allotment

Species	Habitat Type in the Project Area
Ferruginous Hawk	Open grassland or shrubland with isolated trees (typically juniper) for nesting. (*Sensitive*)
Golden Eagle	Habitat generalist, but usually forages in open country for small mammals and carrion. Large cliff faces are used for nesting. (*Sensitive*)
Peregrine Falcon	Habitat generalist, but usually associated with canyons (especially near water) where they hunt for other bird species. Cliff faces are used for nesting. (*Sensitive*)
Prairie Falcon	Typically occupy drier and more open country than peregrine falcons, but there is some overlap in habitat. Cliff faces are used for nesting. Found year-round on the Arizona Strip in low numbers.
Burrowing Owl	Sparsely vegetated grassland or shrubland with existing burrows excavated by badgers, rabbits, or ground squirrels. (*Sensitive*)
Bendire's Thrasher	Favors open habitat with scattered junipers, cliffrose, and sagebrush. An uncommon breeder on the Arizona Strip.
Brewer's Sparrow	Breeds in sagebrush shrublands but can be found in a variety of open habitats and riparian areas during migration and winter. Typically, only nests on the Arizona Strip during years of high precipitation, otherwise breeding occurs to the north. Fairly common in large migrating flocks in spring and fall, otherwise uncommon on the Arizona Strip.
Black-chinned Sparrow	Breeds in the chaparral habitat type within rocky canyons, especially where cliffrose is present. Fairly common on the west side of the Arizona Strip within its limited habitat type.
Gray Vireo	Considered a pinyon-juniper obligate and found in pinyon-juniper forest during the breeding season. Often associated with a low woody shrub layer. Fairly common on the Arizona Strip.
Juniper Titmouse	Considered a pinyon-juniper obligate and found in pinyon-juniper forest during the breeding season. Often associated with a low woody shrub layer. Fairly common on the Arizona Strip.
Cassin's Finch	Small flocks sporadically occur in the pinyon-juniper woodlands during the non-breeding season. Found in higher elevation habitat types such as ponderosa pine during the breeding season. Uncommon on the Arizona Strip.

Species	Habitat Type in the Project Area
Pinyon Jay	Considered a pinyon-juniper obligate and a year-round resident of pinyon-juniper woodlands with areas of open structure containing mixed shrubs (especially sagebrush) and grasses. Found year-round on the Arizona Strip. *(Sensitive)*

Several of these species are also considered sensitive species and are addressed below.

3.5.4.3 Sensitive Species

Sensitive species are usually rare within at least a portion of their range. Many are protected under certain State and/or Federal laws. Species designated as sensitive by the BLM must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or

2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk."

All federally designated candidate species, proposed species, and delisted species in the five years following delisting are included as sensitive species. Based on occurrence records and monitoring data, the sensitive species that may occur within the Shinarump Allotment and that may be affected by actions included in the alternatives presented in Chapter 2 are displayed in Table 3.9.

Table 3.9. Sensitive Species Associated with the Shinarump Allotment

Species	Potential for Occurrence
American peregrine falcon (*Falco peregrinus*)	potential
Ferruginous hawk (*Buteo regalis*)	potential
Western burrowing owl (*Athene cunicularia hypugea*)	potential
Golden eagle (*Aquila chrysaetos*)	potential
Pinyon Jay (*Gymnorhinus cyanocephalus*)	potential
Monarch Butterfly (*Danaus plexippus*)	potential

Five additional sensitive species may also occur within the allotment. However, it has been determined by BLM resource specialists that these species would not be affected by actions proposed in this EA. These species are therefore not addressed further in this document. Table 3.10 lists the sensitive species that will not be discussed in further detail, along with the rationale for their exclusion from further analysis.

Table 3.10 Sensitive Species Excluded from Further Analysis

Species	Rationale for Excluding from Further Analysis
Allen's big-eared bat *Idionycteris phyllotis*	Roost sites such as caves and abandoned mineshafts are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.
Townsend's big-eared bat *Corynorhinus townsendii*	Roost sites such as caves and abandoned mineshafts are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.
California leaf-nosed bat *Macrotus californicus*	Roost sites such as boulder piles, caves, and abandoned mineshafts are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. This species is primarily found in Sonoran Desert scrub south of the Mogollon Plateau and is unlikely to occur in the project area. No measurable impacts (changes from the existing condition) would be expected.
Greater western mastiff bat *Eumops perotis californicus*	Roost sites such as rock crevices are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.
Spotted bat *Euderma maculatum*	Roost sites such as crevices in cliff faces are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.

Peregrine falcon (*Falco peregrinus anatum*)

Habitat and Range Requirements. Peregrine falcons utilize areas that range in elevation from sea level to 9,000 feet and breed wherever sufficient prey is available near cliffs. Preferred habitat for peregrine falcons consists of steep, sheer cliffs that overlook woodlands, riparian areas, and other habitats that support a high density of prey species. Nest sites are usually associated with water. In Arizona, peregrine falcons now occur in areas that had previously been considered marginal habitat, suggesting that populations in optimal habitats are approaching saturation (AGFD 2002).

Nesting sites, also called eyries, usually consist of a shallow depression scraped into a ledge on the side of a cliff. Peregrine falcons are aerial predators that usually kill their prey in the air. Birds comprise the most common prey item, but bats are also taken (AGFD 2002).

Project Area Evaluation. Potential nesting habitat is found along the steep cliff faces on the Shinarump Cliffs. Peregrine falcons may also occur in the allotment during foraging flights.

Ferruginous hawk (*Buteo regalis*)

Habitat and Range Requirements. Ferruginous hawks are large hawks that inhabit the grasslands, deserts, and open areas of western North America – they are the largest North American hawk and are often mistaken for eagles due to their size. Ferruginous means "rusty color" and refers to the bird's colored wings and legs. During the breeding season, they prefer grasslands, sagebrush, and other arid shrub country. Nesting often occurs in isolated trees or utility poles surrounded by open areas (Olendorff 1993). Mammals generally comprise 80 to 90 percent of the prey items or biomass in the diet with birds being the next most common mass component.

Project Area Evaluation. Suitable habitat for the ferruginous hawk is present on the allotment. Although nesting habitat is available, no nest sites are known to occur within the allotment.

Burrowing owl (*Athene cunicularia hypogea*)

Habitat and Range Requirements. Burrowing owls occupy a wide variety of open habitats including grasslands, deserts, or open shrublands. Burrowing owls do not dig their own burrows and must rely on existing burrows dug by prairie dogs, ground squirrels, badgers, skunks, coyotes, and foxes but will also use manmade and other natural openings. Nest-site fidelity is high and burrows are often reused for several years if not destroyed (Haug et al. 1993). Moderate grazing can have a beneficial impact on burrowing owl habitat by keeping grasses and forbs low (MacCracken et al. 1985) but the control of burrowing rodent colonies in grazed areas is believed to be a significant factor in the burrowing owl's decline (Desmond and Savidge 1996). Burrowing owls are infrequently encountered on the Arizona Strip likely due to the lack of prairie dog or other large rodent colonies.

Project Area Evaluation. Suitable habitat for the burrowing owl is present on the allotment. Although nesting habitat is available, no nest sites are known to occur within the allotment.

Golden eagle (*Aquila chrysaetos*)

Habitat and Range Requirements. Typically found in open country, prairies, arctic and alpine tundra, open wooded country, and barren areas, especially in hilly or mountainous regions. Black-tailed jackrabbits and rock squirrels are the main prey species taken (Eakle and Grubb 1986). Carrion also provides an important food source, especially during the winter months. Nesting occurs on rock ledges, cliffs, or in large trees. Several alternate nests may be used by one pair and the same nests may be used in consecutive years or the pair may shift to an alternate nest site in different years. In Arizona they occur in mountainous areas and vacate desert areas after breeding. Nests were observed at elevations between 4,000 and 10,000 feet. Nests are

commonly found on cliff ledges; however, ponderosa pine, junipers, and rock outcrops are also used as nest sites.

Project Area Evaluation. Potential nest sites occur along the Shinarump Cliffs. Golden eagles have been observed in areas adjacent to the Shinarump Allotment and likely utilize the entirety of the allotment for hunting and scavenging. The presence of water developments may attract small mammals, such as black-tailed jackrabbits, which are prey species for golden eagle.

Pinyon Jay (*Gymnorhinus cyanocephalus*)

Habitat and Range Requirements. The pinyon jay is a medium-sized corvid that inhabits much of the intermountain west and is particularly associated with pinyon-juniper ecosystems. Pinyon jays are highly social birds that nest communally and form large flocks that may number into the hundreds. Pinyon jays harvest seeds of pinyon pine, and to a lesser extent ponderosa and limber pine, during the fall and cache these seeds for use in late winter and early spring when other food sources are scarce (Balda and Bateman 1971). Caches are often located in areas that receive little snow, such as under pine and juniper tree crowns or on south slopes where snow melts early, allowing the caches to be accessible during late winter and early spring (Wiggins 2005). Spatial memory is highly developed in pinyon jays and cache relocation is efficient and reliable (Stotz and Balda 1995). Seeds that are not relocated and consumed will often germinate and contribute to pinyon pine regeneration.

Pinyon jay habitat preferences include mosaics of large tracts of pinyon-juniper woodlands especially those areas that contain large, mature, seed-producing pinyon pines, and relatively open structure with mixed shrubs (especially sagebrush) and grasses (Gabaldon 1979, Latta et al. 1999). One nesting colony of pinyon jays typically requires an area of about 230 acres for nesting and about 5,120 acres for total home range (Balda and Bateman 1971).

Project Area Evaluation. Open-structure pinyon-juniper woodlands are found in the Shinarump Allotment and likely support foraging and nesting opportunities for pinyon jays.

Monarch Butterfly (*Danaus plexippus*)

Monarch butterflies breed throughout the United States, absent only from the forests of the Pacific Northwest. Breeding densities are highest from the east coast to the Great Plains, with typically low densities in the western states. Migration corridors are found east of the Rocky Mountains, in the Great Basin, and within California. Wintering areas are located along the California coast and in Mexico (Jepsen et al. 2015). Over the past 20 years a 90% decline in wintering monarchs has been detected in Mexico along with a 50% decline noted in California, leading to a petition for listing under the Endangered Species Act. On December 15, 2020 the USFWS announced that listing the monarch as endangered or threatened under the Endangered Species Act is warranted, but precluded by higher priority listing actions. The monarch is now a candidate under the Endangered Species Act and will be reviewed annually but the USFWS until a listing decision is made (USFWS 2021).

Monarch larvae feed exclusively on 27 species of milkweed which can be found in a variety of habitats such as rangelands, agricultural areas, riparian zones, wetlands, deserts, and woodlands. In the western U.S. the two most important larval food sources are narrow-leaved milkweed (*Asclepias fascicularis*) and showy milkweed (*A. speciosa*). Adult monarchs forage on a wide variety of flowering plants for nectar during migration periods (Brower et al. 2006).

Project Area Evaluation. Monarchs may breed in low numbers within the project area, although documentation is lacking. Milkweed species are present, including showy milkweed. Migrating monarchs have been observed on the Arizona Strip in the fall in areas outside of those analyzed in this EA.

Chapter 4 – Environmental Consequences

4.0 Environmental Consequences

4.1 Introduction

The potential consequences or effects of each alternative are discussed in this chapter. Only impacts that may result from implementing the alternatives are described in this EA. If an ecological component is not discussed, it is because BLM resource specialists considered effects to the component and determined that the alternatives would have minimal or no effects (see Table 3.4). The intent of this analysis is to provide the scientific and analytical basis for the environmental consequences.

4.2 Direct and Indirect Impacts

4.2.1 Livestock Grazing

4.1.1.1 Alternative A – Issue New 10-Year Grazing Permit with Change to Season of Use

This alternative would affect the livestock grazing permittee on the Shinarump Allotment by renewing the term grazing permit with no change in active preference (42 AUMs) from the current permit. However, the season of use would change from July 1 – October 30 to November 15 – March 15 (see Table 2.1). This action would result in a continued viable ranching operation for the livestock permittee and provide some degree of stability for the permittee. Permit renewal would also meet the purpose and need for action identified in Chapter 1 of this EA – to provide for livestock grazing opportunities on public lands where consistent with meeting management objectives, including the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management and the Arizona Strip Field Office RMP (BLM 2008a), and respond to applications to fully process and renew permits to graze livestock on public land. The change in season of use would benefit the range health, and therefore forage availability, as the plants that grow on the Shinarump Allotment would not be grazed during the growing season and all warm season grasses that are grazed each year under the current permit (Alternative C) would be rested annually. Since the number of livestock grazing on the allotment would remain the same as current, livestock would not affect the ability of the Shinarump Allotment to meet all applicable standards for rangeland health (see discussion of impacts to vegetation in Section 4.2.3.1).

4.1.1.2 Alternative B – No Grazing

This alternative would drastically affect the livestock grazing permittee on the Shinarump Allotment by not authorizing any active preference under the new term grazing permit. All of the 42 active AUMs would be suspended (i.e., livestock grazing would be deferred for the ten-year permit period). In ten years, the allotment would be re-evaluated. The action would not provide current or future use, or stability for the permittee's livestock operation because he would not be authorized to use the allotment. Losing grazing privileges on this allotment could put the permittee out of business because he would be forced to seek alternate arrangements for his herd, such as leasing private pasture or obtaining substitute federal grazing permits on a different allotment which could be challenging because federal permits do not become available

very often and are in high demand. This alternative would not meet the purpose and need for action identified in Chapter 1 of this EA – to provide for livestock grazing opportunities on public lands where consistent with meeting management objectives, and to respond to applications to fully process and renew permits to graze livestock on public land.

4.1.1.3 Alternative C – No Action (Renew Grazing Permit with Current Terms and Conditions)

The no action alternative would affect the livestock grazing permittee on the Shinarump Allotment by renewing the term grazing permit. This alternative would maintain the current active preference for the allotment (42 AUMs) for an additional ten years, which would result in a continued viable ranching operation for the livestock operator and provide some degree of stability for the permittee's livestock operation.

Permit renewal would meet the purpose and need for action identified in Chapter 1 of this EA – to provide for livestock grazing opportunities on public lands where consistent with meeting management objectives, including the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management and the Arizona Strip Field Office RMP (BLM 2008a), and to respond to applications to fully process and renew permits to graze livestock on public land. The Shinarump Allotment partially meets the applicable standards for rangeland health. Since the number of livestock grazing on the allotment and the current grazing system would remain in effect, livestock grazing should not affect the ability of the allotment to meet these standards for rangeland health (see discussion of impacts to vegetation in Section 4.2.3.3).

4.1.2 Soils

A full review of the varied impacts to soils from domestic grazing is beyond the scope of this analysis. Similarly, highly detailed, ground-truthed soils analysis on existing direct and indirect effects from grazing is not practicable given staffing constraints and the scope/scale of grazing on BLM lands of the Arizona Strip. For this reason, impacts to soils are evaluated from the criteria of: 1) soil properties that confer resiliency and/or susceptibility to impacts from the alternatives; 2) vegetative health as a proxy for soil health; and 3) review of the land health evaluation and current vegetation monitoring data.

Soil properties that are important to maintaining healthy vegetation and hydrologic function for grazing by domesticated animals and wildlife include (but are not limited to) permeability, erosion rates, and properly functioning riparian soils. These functions are codified in the Arizona Standards for Rangeland Health (BLM 1997) and incorporated by reference from the BLM Arizona Strip Field Office RMP (BLM 2008a).

Livestock grazing can increase soil compaction in trailing, watering, and mineral supplement areas. The Shinarump Allotment was deemed to be meeting applicable standards for rangeland health in the land health evaluation (BLM 2004). As described in Section 3.3, current monitoring data indicates that the allotment is meeting Standard 1 (upland sites – used to assess soil conditions) and partially meeting Standard 3 (desired resource conditions – used to determine whether areas are meeting desired plant community objectives). As noted previously, Standard 3 is partially met due to high shrub (sagebrush) and tree composition which

outcompetes understory species and results in lack of grasses, forbs, and other shrubs. The monitoring data used to develop the 2004 LHE report noted compositions of grasses and shrubs similar to that most recently collected, where perennial grass composition is lower than desired due to high sagebrush composition. Range conditions on the allotment have not changed since 2004; instead, the BLM feels it is making a more accurate land health determination. Since vegetative health is used as a proxy for soil health, areas that are meeting the previously described standards for rangeland health should have soils that have similarly favorable trends with regard to productivity. In addition, the 45% utilization threshold would help promote conditions that maintain or improve soil health and productivity.

The relative dearth of soil organic matter in the soils mapped for the allotment does render these soils less productive and to some regard more susceptible to compaction and erosion. Several soil map units (10, 23, 54, and 55) are less suited to grazing for a number of reasons including higher susceptibility to soil compaction and erosion, chemical properties that hamper vegetation growth, and greater landscape instability. These soil types are mapped on nearly 50% of the Allotment. Lower range production (150 to 650 pounds per acre on normal year; NRCS 2021) and more deleterious effects to soils are likely when these soils are subject to disturbance. Grazing utilization is likely not high on these areas due to the higher slopes and lower vegetation productivity, but trailing impacts and may occur.

4.1.2.1 Alternative A – Issue New 10-Year Grazing Permit with Change to Season of Use.

Under this alternative, livestock grazing would occur on the Shinarump Allotment with the same active preference (42 AUMs) as currently authorized. Maintenance of the current level of livestock grazing authorized would retain the status quo for the impacts to soils from grazing. However, this alternative proposes a change in season of use, from summer/fall grazing (as is currently authorized) to late fall/winter. This change in season of use would result in foliage remaining on vegetation during the warmer season, allowing vegetation to complete growth for the season to produce seeds for future reproductive needs and store energy to get through the dormant season (see discussion of impacts to vegetation in Section 4.2.3.1). The canopy formed by vegetation would reduce impacts to the soil surface from rain and or wind thereby decreasing the breakdown of soil aggregates; the 45% utilization threshold would help promote conditions that maintain or improve soil health and productivity. The allotment would therefore be expected to continue to meet land health standard 1.

4.1.2.2 Alternative B – No Grazing

The effects to soil resources from the cessation of grazing by livestock would be variable. Commonly associated effects to soils from grazing (namely compaction and reductions in vegetative cover) would cease. Vegetation, which provides a protective canopy for soils, would have the most rest and recovery as compared to the other alternatives. Abiotic (time, freeze-thaw) and biotic processes (i.e. root growth, soil organic matter accumulation) would help attenuate some grazing impacts where they occur. The extent of soil recovery in the form of improved infiltration capacity (soil permeability) and erosion rates would be hard to quantify on a landscape scale. However, removing all livestock from the allotment may result in surface compaction being reduced over time, which would increase infiltration rates, root space, available water holding capacity, and aeration. The physical condition of the surface layers of

the soils would slowly improve. A gradual decrease in water runoff in areas near stock waters would likely be realized based on a lack of livestock use, resulting in greater soil infiltration. This alternative would likely have the greatest beneficial impacts to soils of all the alternatives.

4.1.2.3 Alternative C – No Action (Renew Grazing Permit with Current Terms and Conditions)

Under this alternative, the active preference would remain at 42 AUMs. Maintenance of the current level of livestock grazing would retain the status quo for the previously described impacts to soils from grazing. The driving and resisting forces of soil properties as they relate to grazing use would continue in the absence of other factors such as climatic events or wildfire. Current level of impacts to soils would be maintained and no changes in soil conditions are anticipated. Ongoing monitoring of the relevant ecological conditions (e.g., soil, vegetation, and hydrology) would indicate whether impacts to these resources are occurring, and should inform short and long-term use, management considerations, and actions in relation to the permitted grazing action.

4.1.3 Vegetation

4.1.3.1 Alternative A – Issue New 10-Year Grazing Permit with Change to Season of Use

Plants live in ecosystems full of herbivores that range from small insects to large grazing animals. Losing leaves or stems to herbivores is a common event in the life of a rangeland plant. For rangeland plants to remain healthy and productive, enough vegetation must remain after grazing so that plants can photo-synthesize and manufacture energy to produce more leaves, stems, and seeds. Plants also need to produce and store energy as starches and sugars in roots and crowns to successfully start the next season of growth. Only when too much of the plant is removed does the plant suffer in a way that yields lasting detrimental effects. Substantial damage to rangeland plants generally only occurs under repeated and heavy grazing.

The impact of grazing on plant growth depends greatly on when the grazing occurs during the growing season and at what stage of the plant's life cycle. Plants are generally less damaged by grazing early in the season when time, soil moisture, and nutrients needed for regrowth are abundant. Plants are most likely to be damaged by grazing when the plant is beginning to produce flowers and seeds. At this time, the plant has high energy demands to produce seeds, complete growth for the season, and store energy to get through the dormant season. Plus, this generally occurs at the peak of summer when the environment is hot and dry and not favorable for regrowth. Once the plant produces seeds and turns brown (i.e., begins to senesce and becomes dormant), it is no longer sensitive to grazing. At this time, the leaves are not photosynthesizing and are no longer being used by the plant (University of Idaho 2011).

Range plants evolved to withstand grazing and can withstand a heavy grazing event if done in the right season and if plants are given enough time to recover after grazing. Thus, plants can withstand removal of a part of their current year's growth and still achieve normal growth the following year. Most rangeland grasses and forbs can have 40-50% of their leaves and stems removed every year and still remain healthy and productive. In general, light use is considered less than 40%, moderate 40-65%, and heavy greater than 65% of biomass removed. The season during which the grazing occurs, and periodic rest from grazing, are very important (University

of Idaho 2011). Properly managed livestock grazing is designed to cause minimal impacts to rangeland resources. Data in Table 3.2 shows that utilization on key species over the past nine years has been well below the allowed 45% at the key area, which is expected to continue under the proposed new season of use (late fall/winter).

Under this alternative, season of use for the allotment would be changed from July 1 – October 30 (summer/fall use) to November 15 – March 15 (late fall/winter). Thus, this alternative would better provide for the physiological needs of vegetation than the current season of use (Alternative C) since grazing would occur during the non-growing, or dormant, season (see Table 3.7) – this benefits key species and other vegetation by increasing plant vigor, aiding in seed dissemination, and providing periodic rest during critical growing periods (Trlica 2013). Grazing vegetation during the dormant season allows plants to fix carbon, reproduce, and set seed as the growing season progresses into the summer. Dormant season grazing would have neutral to negligible effects on plant communities because plants would be able to fix a significant amount of carbon prior to biomass removal and would be able to set seed. Perennial grasses would have increased capability to produce seed because grazing would occur after they have produced much of their above-ground biomass. Overall plant vigor would be maintained by dormant and late season grazing because plants would be grazed only after senescing (the plant growth phase from full maturity to death or dormancy). After the grasses go dormant, they are affected little by grazing (University of Idaho 2011).

When considering effects of grazing on shrub species, one must look at the amount of usage of current year's growth – these include the leaves and young stems that are important for photosynthesis. The current year's growth of shrubs is the most digestible part of the plant and is the portion generally removed by browsing animals such as deer and goats. The buds are especially important to protect from grazing because they will be the source of new stems and leaves for continued growth after grazing. In winter, shrubs survive by using energy compounds (i.e., starches and sugars) stored in the stems. Thus, although the shrub is dormant, it is important to watch browsing of these stems. An indicator of "overgrazing" of shrubs is moderate or heavy hedging (i.e., growth of lateral stems just below a grazed point) and a lack of new or juvenile plants (University of Idaho 2011). Table 3.2 shows recent utilization on shrubs, based on current year's growth by weight, during the grazing season. As shown, utilization has been well below the allowed 45% at the key area.

Allotment monitoring data indicates that resource conditions on the allotment currently meet Standard 1 and partially meet Standard 3. Livestock grazing is not the reason for Standard 3 being partially met. As discussed in Appendix B, the composition of perennial grasses at the key area should be 70-80%, but it is currently 51% due to the dominance by sagebrush; composition of sagebrush should be 15%, but it is currently 36%. In other portions of the allotment (away from the key area), trees (pinyon pine and juniper) are also increasing in density and out-competing grasses. Since the same management regime has been in place for many years, it is expected that livestock grazing proposed under this alternative (changing grazing to the dormant season) would benefit vegetation. Ecological condition should be maintained (the key area is in mid-seral stage, which is a stable condition).

Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made (as described in Section 2.2.3 of this EA).

4.1.3.2 Alternative B – No Grazing

Under this alternative, no livestock grazing would occur so plants would only be minimally grazed by wildlife. Vegetation would therefore have the most rest and recovery as compared to the other alternatives. While the allotment is partially meeting the applicable standards for rangeland health, plant communities would benefit from rest. Because no livestock grazing would occur, plants would remain ungrazed or minimally grazed (by wildlife) each year. All plant species would benefit from no grazing. This alternative would therefore result in the least grazing on vegetation, meaning the plants would have the maximum amount of energy compounds in their stems for survival and reproduction.

4.1.3.3 Alternative C – No Action (Renew Grazing Permit with Current Terms and Conditions)

Under this alternative, grazing would be authorized with the same season of use and active preference as the current permit. Late summer/fall grazing defers use only during the growing season for cool season plants. In addition, grazing would not occur during the growing season for cool season plants (unless growth starts "early" due to local climatic conditions) – this grazing system would maintain plant vigor and therefore vegetative condition. In addition, utilization in each pasture has been light in recent years (see Table 3.2), which leaves ample foliage on palatable plants to produce and store carbohydrates. Since the same management regime has been in place for many years, it is expected that livestock grazing proposed under this alternative would minimally affect vegetation, and ecological condition would be maintained – vegetation is in mid seral stage, which is a stable condition).

Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made (as described in Section 2.2.3 of this EA). However, current monitoring data does not indicate that any changes to grazing management are necessary.

4.1.4 Wildlife, Including Big Game, Migratory Birds, and Sensitive Species.

Herbaceous vegetation provides forage and concealment cover for wildlife species, particularly during the spring breeding period when calving, fawning, nesting, and rearing of young occurs. Livestock grazing reduces the height and amount of herbaceous vegetation. The presence of livestock and the movement of livestock between areas of use could result in the direct disturbance or displacement of some wildlife from preferred habitats, nesting/birthing sites, or water sources. Both the disturbance and displacement of wildlife and the reduction of herbaceous forage and cover could limit the productivity and reproductive success of some species.

4.1.4.1 Alternative A – Issue New 10-Year Grazing Permit with Change to Season of Use.

Under this alternative, season of use for the allotment would be changed from July 1 – October 30 (summer/fall use) to November 15 – March 15 (late fall/winter). As described in the

Vegetation section above (4.2.3.1), grazing during the dormant season benefits vegetation by increasing plant vigor, aiding in seed dissemination, and providing periodic rest during critical growing periods. Dormant season grazing would have neutral to negligible effects on plant communities (i.e., habitat).

Big Game

The presence of livestock and the trailing of livestock between use areas could result in the direct disturbance or displacement of some big game species from preferred habitats and/or water sources however, this displacement would only be temporary. This alternative would change the season of use for the Shinarump Allotment from summer/fall to fall/winter. Mule deer are most likely to be present in the allotment during the fall and winter, during the migration period which would overlap with the season of use proposed in this alternative, with the potential for competition of forage between livestock and mule deer. Mule deer winter diets are primarily composed of a diverse combination of various forbs, browse species, and new growth on cool-season grasses and are especially reliant on shrubs for forage during critical winter months. Winter habitat is often considered the most limiting habitat type including habitats such as sagebrush-steppe, pinyon-juniper woodlands, and mountain shrub (Watkins et al. 2007). As described in Section 3.5.3, the two principal vegetative types within the allotment are shrub-grassland and pinion-juniper woodland. The eastern edge of this allotment and the adjacent allotment are classified by AGFD as crucial mule deer winter range. Therefore, this alternative has the greatest potential to result in competition for forage between livestock and big game species.

As described in Section 4.2.3.1, when considering effects of grazing on shrub species, one must look at the amount of usage of current year's growth – these include the leaves and young stems that are important for photosynthesis. In winter, shrubs survive by using energy compounds (i.e., starches and sugars) stored in the stems. Thus, although the shrub is dormant, it is important to watch browsing of these stems. Since utilization on vegetation, including shrubs, has been light in recent years (see Table 3.2) competition for forage between livestock and mule deer should be minimal.

Allotment monitoring data indicates that resource conditions on the allotment partially meet the applicable standards for rangeland health, as outlined in Section 3.3 and Appendix B of this EA. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made (as described in Section 2.3 of this EA).

Migratory Birds

Properly managed livestock grazing is designed to cause minimal impacts to rangeland resources, including wildlife habitat. As described previously, allotment monitoring data indicates that resource conditions on the Shinarump Allotment partially meet the applicable standards for rangeland health (Standard 1 is being met, Standard 3 is partially met due to sagebrush and pinyon-juniper encroachment). Vegetation in the allotment is sufficient to provide food and shelter requirements for populations of migratory birds. These species would be minimally affected because grazing under this alternative would occur during the dormant season. Managing this allotment to achieve DPC objectives and implementation of the proposed utilization level

(maximum of 45%) would result in maintaining or improving the ecological condition of the allotment (see "Vegetation" discussion above – Section 4.2.3.1). Implementation of this alternative is therefore unlikely to impact any species of migratory bird known or suspected to occur on the allotment. No take of any migratory bird species is anticipated.

Sensitive Species

Peregrine falcon, golden eagle

Nesting sites for peregrine falcons or golden eagles would not be impacted by livestock within the Allotment because these sites are located on ledges in cliff faces that are inaccessible to livestock. Prey species for peregrine falcons, such as mourning doves, generally do well in human altered environments including grazed areas. Habitat for golden eagle prey species, such as black-tailed jackrabbits, could be adversely impacted if overutilization occurs. Average utilization over the past 26 readings has been 27.8% (Table 3.2) which is well below the allowable 45%. Furthermore, the effects of moderate grazing can be negligible to slightly beneficial for many prey species (Olendorff 1993). Vegetation in the allotment is sufficient to provide food and shelter requirements for populations of prey species for the peregrine falcon. Prey habitat for these species would be minimally affected because grazing under this alternative would occur during the dormant season – grazing vegetation during the dormant season allows plants to fix carbon, reproduce, and set seed as the growing season progresses into the summer. Dormant season grazing would have neutral to negligible effects on plant communities because plants would be able to fix a significant amount of carbon prior to biomass removal and would be able to set seed. Perennial grasses would have increased capability to produce seed because grazing would occur after they have produced much of their above-ground biomass. Overall plant vigor would be maintained by dormant and late season grazing because plants would be grazed only after senescing (the plant growth phase from full maturity to death or dormancy) – see discussion on impacts to vegetation in Section 4.2.3.1.

In addition, disturbance to nest sites from livestock management operations is unlikely given the remote and inaccessible locations these species choose for nesting. Implementation of this alternative is not likely to impact peregrine falcon or golden eagle habitat or nesting success.

Ferruginous hawk

Nesting sites and habitat for ferruginous hawk prey species have the potential to be impacted by livestock grazing within the allotment. Isolated nest trees used by this species could be impacted through rubbing of the trunk and girdling the trees through abrasion, or by damaging the root system from congregations of cattle seeking shade. The likelihood of this occurring in the Shinarump Allotment is minimal since the trees where nests would occur are larger in girth and would not be readily affected by an animal rubbing against them (Olendorff 1993 acknowledged that this situation is not prevalent with pinyon pine or juniper trees), and no documented nests occur within the allotment. Habitat for prey species, such as black-tailed jackrabbits, could be adversely impacted if overutilization occurs. However, the effects of light to moderate grazing (such as is documented in this allotment) can be negligible to slightly beneficial for many prey species (Olendorff 1993). Vegetation in the allotment is sufficient to provide food and shelter requirements for populations of prey species for the ferruginous hawk. Managing the allotment to achieve DPC objectives and implementation of the proposed utilization level would result in

maintaining or improving the ecological condition of the allotment. Ferruginous hawks are sensitive to disturbance near the nest site. However, no nesting has been documented in this allotment so impacts to nesting are unlikely and would not lead to a trend toward listing.

Burrowing owl

Nesting burrows for burrowing owls could potentially be impacted by livestock within the Allotment through trampling. However, burrowing owls prefer open country with sparse vegetation and can do well in moderately to heavily grazed areas. Occupied burrows in adjacent allotments frequently have cows nearby during monitoring visits (Langston, personal obs.). Prey species are numerous in the Shinarump Allotment and include small mammals, insects, reptiles, and amphibians. Vegetation in the allotment is sufficient to provide food and shelter requirements for populations of prey species for the burrowing owl. Managing the allotment to achieve DPC objectives and implementation of the proposed utilization level would result in maintaining or improving the ecological condition of the allotment. Disturbance to nest sites from livestock management operations would be minimal because this species is known to tolerate moderate levels of disturbance. Implementation of this alternative is not likely to impact burrowing owl habitat or nesting success in the allotment.

Pinyon jay

Livestock grazing on the Shinarump Allotment is not likely to impact pinyon jay nesting or foraging. Pinyon jays nest in trees within dense pinyon-juniper woodlands which typically has less forage available for livestock. Pinyon jays rely heavily on pinyon nuts as a food source which are not consumed by livestock. In summary, some minor, short-term disturbance from livestock management operations may impact nesting pinyon jays but this would be expected to be negligible.

Monarch Butterfly

Under this alternative, livestock grazing would be authorized for the Shinarump Allotment with a change in the season of use from summer/fall to fall/winter. When carefully managed, grazing can provide an important management tool for habitat valuable to monarchs such as grasslands and shrublands by maintaining the open herbaceous- or shrub-dominated plant communities (Vanbergen et al. 2014). Grazing as proposed under this alternative would be up to moderate intensity (although historically grazing intensity has been light – see Table 3.2). Fall and winter grazing have the least impact on pollinators, including monarchs, as most plants and pollinators are the least active in November and December (The Xerces Society 2018). Managing this allotment to achieve DPC objectives and implementation of the proposed utilization level (up to 45%) would result in maintaining or improving the ecological condition of the allotment (see "Vegetation" discussion in Section 4.2.3.1). Implementation of this alternative would not likely impact monarch butterflies or monarch butterfly habitat.

4.1.4.2 Alternative B – No Grazing

Big Game

Under this alternative, no livestock grazing would occur so plants would only be minimally grazed (by wildlife). Vegetation would therefore have the most rest and recovery as compared to

the other alternatives – while the allotment is partially meeting the applicable standards for rangeland health, plant communities would benefit from rest. Since this alternative would result in the least grazing on vegetation, plants would have the maximum amount of energy compounds in their stems for survival and reproduction; plant communities would continue to provide sufficient forage for mule deer. In addition, since no livestock would be present on the allotment, no potential for displacement or competition for forage would occur.

Migratory Birds

Under this alternative, vegetation would have the most rest and recovery as compared to the other alternatives; plant communities would benefit from rest. Because no livestock grazing would occur, plants would remain ungrazed or minimally grazed (by wildlife) each year. Grasses would continue to fix a significant amount of carbon, produce seed, and set seed; shrubs would have the maximum amount of energy compounds in their stems for survival over the winter dormant season. Vegetation in the allotment would therefore continue to provide the food and shelter requirements for migratory birds. In addition, nesting sites for migratory birds would not be impacted by livestock within the allotment. No take of any migratory bird species would be anticipated from implementation of this alternative.

Sensitive Species

Under this alternative, vegetation would have the most rest and recovery as compared to the other alternatives; plant communities (which provide habitat components for prey species) would benefit from rest. Because no livestock grazing would occur, plants would remain ungrazed or minimally grazed (by wildlife) each year. Grasses would continue to fix a significant amount of carbon, produce seed, and set seed; shrubs would have the maximum amount of energy compounds in their stems for survival over the winter dormant season. Vegetation in the allotment would continue to provide food and shelter requirements for populations of prey species (small mammals, birds, and rabbits) for these birds.

4.1.4.3 Alternative C – No Action (Renew Grazing Permit with Current Terms and Conditions)

Big Game

Impacts under this alternative would be similar to those described for Alternative A except the season of use would remain summer/fall. The presence of livestock and the trailing of livestock between use areas could displace some wildlife from preferred habitats and/or water sources, although this displacement would only be temporary.

As described previously, allotment monitoring data indicates that resource conditions on the allotment partially meet the applicable standards for rangeland health (see Section 3.3 and Appendix B) – Standard 1 is being met, Standard 3 is partially met due to sagebrush and pinyon-juniper encroachment. Since the same management regime has been in place for many years, it is expected that livestock grazing proposed under this alternative would minimally affect habitat for mule deer, and ecological condition of that habitat would be maintained or improved (see Section 4.2.4.2 above). Since utilization on vegetation has been light in recent years (see Table 3.2), competition for forage between livestock and mule deer should be minimal. Monitoring of the

allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made (as described in Section 2.3 of this EA) – current monitoring data does not indicate that any changes to grazing management are necessary. Implementation of this alternative would therefore not affect meeting habitat (i.e., forage) objectives for mule deer.

Migratory Birds

Impacts under this alternative would be similar to those described for Alternative A except the season of use would remain summer/fall. Allotment monitoring data indicates that resource conditions on the allotment partially meet the applicable standards for rangeland health (Standard 1 is being met, Standard 3 is partially met due to sagebrush and pinyon-juniper encroachment). Managing this allotment to achieve DPC objectives and implementation of the utilization level (up to 45%) would help ensure that habitat components for migratory birds are maintained. Implementation of this alternative is therefore unlikely to impact any species of migratory bird known or suspected to occur on the allotment, and no take of any migratory bird species is anticipated.

Sensitive Species

Peregrine falcon, golden eagle, ferruginous hawk, burrowing owl

Impacts under this alternative would be similar to those described for Alternative A except the season of use would remain summer/fall. Vegetation in the allotment is currently sufficient to provide food and shelter requirements for populations of prey species (small mammals, birds, and rabbits) for these birds. Allotment monitoring data indicates that resource conditions on the allotment partially meet the applicable standards for rangeland health (Standard 1 is being met, Standard 3 is partially met due to sagebrush and pinyon-juniper encroachment). Managing the allotment to achieve DPC objectives and implementation of the proposed utilization level (up to 45%) would result in maintaining the ecological condition of the allotment (see Section 4.2.3.3). Nesting sites and habitat for peregrine falcons and golden eagles would not be impacted by livestock within the allotment because these species select sites that are inaccessible to livestock. Minor disturbance at ferruginous hawk and burrowing owl nest sites, as described under Alternative A, could potentially occur. However, no ferruginous hawk nesting has been documented in this allotment, and disturbance to burrowing owl nest sites from livestock management operations would be minimal because this species is known to tolerate moderate levels of disturbance. Therefore, implementation of this alternative is not likely to impact these sensitive species within the allotment and would not lead to a trend toward listing.

Pinyon jay

Impacts under this alternative would be similar to those described for Alternative A except the season of use would remain summer/fall. Livestock grazing on the Shinarump Allotment is not likely to impact pinyon jay nesting or foraging. While some minor, short-term disturbance from livestock management operations may impact nesting pinyon jays, this would be expected to be negligible.

Monarch Butterfly

Impacts under this alternative would be similar to those described for Alternative A except the season of use would remain summer/fall. Thus, there may be grazing pressure during some or all of the most active season for most pollinators, including monarchs (generally May to September). As a result, this can become challenging for pollinators as landscapes tend to homogenize, vegetation and pollinators lack sufficient refuge or time to recover, and floral resource availability decreases. Season-long summer grazing can become especially problematic as it occurs at the same time every season and can lead to eventually limiting plants' ability to set seed and therefore inhibits the recovery of plant communities from disturbance.

Allotment monitoring data indicates that resource conditions on the allotment partially meet the applicable standards for rangeland health (Standard 1 is being met, Standard 3 is partially met due to sagebrush and pinyon-juniper encroachment). Managing the allotment to achieve DPC objectives and implementing the proposed utilization level (up to 45%) would result in maintaining the ecological condition of the allotment (see "Vegetation" discussion in Section 4.2.3.3). Minor disturbance of Monarch butterfly habitat could potentially occur, but this would be expected to be negligible. Since the same management regime has been in place for many years and vegetation is in mid seral stage, which is a stable condition, it is expected that livestock grazing proposed under this alternative would minimally affect vegetation and ecological condition would be maintained.

4.3 Cumulative Impacts

"Cumulative impacts" are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. This EA is intended to qualify and quantify the impacts to the environment that result from the incremental impact of the alternatives when added to other past, present, and reasonably foreseeable future actions. These impacts can result from individually minor but collectively important actions taking place over a period of time.

- ***Livestock grazing*** – Livestock grazing in the region has evolved and changed considerably since it began in the 1860s and is one factor that has created the current environment – livestock grazing has occurred in the area for 150+ years. The Shinarump Allotment and the adjacent BLM-administered land are active grazing allotments. Each of these allotments are managed under a grazing system that is documented and described in an AMP. Cumulative impacts from livestock grazing are discussed in more detail in Section 4.3.1.
- ***Recreation*** – Recreation activities occurring throughout the Allotment and adjacent areas involve a broad spectrum of pursuits ranging from dispersed and casual recreation to organized, BLM-permitted group uses. Typical recreation in the region includes off-highway vehicle (OHV) driving, scenic driving, hunting, hiking, wildlife viewing, horseback riding, camping, backpacking, mountain biking, geocaching, picnicking, night-sky viewing, and photography. The Arizona Strip is known for its large-scale undeveloped areas and remoteness, which provide an array of recreational opportunities

for users who wish to experience primitive and undeveloped recreation, as well as those seeking more organized or packaged recreation experiences.

- ***Mining and Mineral Resources*** – Public lands within and adjacent to the Shinarump Allotment are open to mineral development. The primary economic mineral resources in the area are salable minerals (consisting primarily of sand, stone, and gravel but also clay), gypsum, and uranium. The potential for gravel is moderate. Several existing mineral material pits occur in the area.

4.3.1 Cumulative Impacts to Livestock Grazing

Livestock grazing in the region has evolved and changed considerably since it began in the 1860s and is one factor that has created the current environment. At the turn of the century, large herds of livestock grazed on unreserved public domain in uncontrolled open range. Eventually, the range was stocked beyond its capacity, causing changes in plant, soil, and water relationships. Some speculate that the changes were permanent and irreversible, turning plant communities from grass and herbaceous species to brush and trees. Protective vegetative cover was reduced, and more runoffs brought erosion, rills, and gullies. In response to these problems, livestock grazing reform began in 1934 with the passage of the Taylor Grazing Act. Subsequent laws, regulations, and policy changes have resulted in adjustments in livestock numbers, season-of-use changes, and other management changes. Given the past experiences with livestock impacts on public land resources, as well as the cumulative impacts that could occur on the larger ecosystem from grazing on various public and private lands in the region, management of livestock grazing is an important factor in ensuring the protection of public land resources. Past, present, and reasonably foreseeable actions within the analysis area would continue to influence range resources, watershed conditions and trends. The impact of vegetation treatments, voluntary livestock reductions during dry periods, and implementation of a grazing system have improved range conditions. The net result has been greater species diversity, improved plant vigor, and increased ground cover from grasses and forbs.

In the long-term, as the population of the surrounding area increases (which would increase the use of public lands), conflicts between livestock grazing and these other uses could arise. Resolving conflicts may require adjustments and/or restrictions placed on livestock grazing management. Other factors also influence livestock grazing operations, such as climatic and market fluctuations. A six-year drought in the region occurred between 1998 and 2004, which dramatically affected livestock grazing operations on the Arizona Strip, resulting in virtually all cattle being pulled from the public lands in 2004. Similar fluctuations in livestock numbers would likely occur in the future.

The effects on livestock grazing in the Shinarump Allotment have been analyzed under the "Direct and Indirect Effects" section of this chapter. In addition to livestock grazing, there are a wide variety of uses and activities occurring on the lands within and adjacent to the allotment, as described above. Since livestock grazing occurs throughout the area and on adjacent private lands, it is reasonable to assume that impacts similar to those identified earlier in this chapter would occur elsewhere in the area. Another action not mentioned above that may affect livestock grazing is listing a species as threatened or endangered under the ESA, including designating critical habitat. Making areas unavailable for livestock grazing, placing restrictions

on season of use, reducing access, or applying other restrictions meant to protect special status species may impact livestock grazing operations through the loss of forage, increased difficulty of access, increased costs of operation, and reduced livestock numbers (BLM 2007). While several species have recently been added to the endangered and threatened species list and had critical habitat designated (including Fickeisen plains cactus, Gierisch mallow, and yellow-billed cuckoo), none of these species are known to occur within the Shinarump Allotment. It is therefore anticipated that none of the alternatives would result in cumulative impacts to livestock grazing when added to other past, present, and reasonably foreseeable activities in the area.

4.3.2 Cumulative Impacts to Soils

The cumulative impact analysis area for soils is the HUC-8 Kanab watershed. This watershed covers the spatial boundaries of the Shinarump allotment and has similar environmental conditions and land use/management activities to those of the EA. Actions that contribute cumulatively to the overall condition of soils for the cumulative impact analysis area are livestock grazing, recreational activities, residential and commercial development, mining activities, energy and water-use infrastructure, and wildfire.

Soils in the analysis area formed under conditions in the last 10,000 years (post-glaciation) that had no vehicles or domesticated grazing animals to impact them. Population growth, grazing, and infrastructure developments over the past 150 years have resulted in soil disturbance on hundreds of thousands of acres at and near homesteads, communities, roads, utility corridors, and waters across the Arizona Strip. Ground and surface water use/withdrawal has cumulative impacts on soils as they can "dewater" portions of the landscape, rendering soils drier, less productive, and more vulnerable to all forms of erosion. Continued population growth and the resulting growth in vehicle and OHV use and visitation in the region would continue to add to the acreage of soil disturbance. Cyclical drought and annually higher air temperatures could reduce overall vegetative cover, making soils more susceptible to erosion. Wildfire would continue to make soils more susceptible to erosion and conversion of the vegetation to types that are less conducive to soil health and productivity. For example, there were several large wildfires in the cumulative impact analysis area in 2020, including the Mangum Fire and the Pine Hollow Fire. The Mangum Fire burned primarily in the North Kaibab Ranger District, approximately 16 miles north of the North Rim of Grand Canyon National Park. It burned a total of 71,450 acres. The Pine Hollow Fire occurred primarily on public lands in the Arizona Strip Field Office, with some public land in Utah and Arizona state land also burning. A total of 11,405 acres burned in the Pine Hollow Fire. This was a wind-driven fire that started in closed canopy pinyon pine and Utah juniper woodlands at an elevation of approximately 6,200 feet. The fire consumed both the tree canopy and understory vegetation. The soils of the burned area are now left exposed to erosion, susceptible to invasion by noxious weeds, and vulnerable to the spread of cheatgrass or other non-native annual grasses. The BLM has received funding to implement emergency stabilization and rehabilitation to restore the area and mitigate the effects of the fire – treatments will re-establish native and desired vegetation, and therefore stabilize areas that were devoid of vegetative cover and subject to excessive erosion. This will help ensure soil conditions support proper functioning of hydrologic, energy, and nutrient cycles.

Continuing to monitor soils and to implement the Arizona Standards for Rangeland Health would help ensure that soils exhibit infiltration, permeability, and erosion rates that are

appropriate to soil type, climate, and ecological site. With adaptive management that responds to grazing-related issues as they arise (outside of the 10-year time frame for permit renewal), cumulative effects to soil resources can be reduced.

4.3.3 Cumulative Impacts to Vegetation

Vegetation on the Arizona Strip has gone through significant changes since the 1870s due to historic land use practices and the introduction of non-native species. Livestock grazing would continue across the area on BLM-administered lands. The land health evaluation and permit renewal processes would help ensure grazing practices are conducted in a manner to maintain or improve the ecological health of the area. Rangeland management practices would act to prevent and control the spread of invasive plant species, maintain diverse and natural plant communities, improve wildlife habitat, reduce erosion, and maintain water quality. The objectives developed to manage for healthy rangelands have a goal of keeping the entire ecosystem healthy and productive in order to ensure that it yields both usable products and intrinsic values.

As described in Section 3.3 and Appendix B, pinyon-juniper occupies approximately 80 percent of the Shinarump Allotment in varying degrees of composition, with some areas having near monocultures of trees with a lack of grasses, forbs, and shrubs. Other areas are dominated by sagebrush, also with a lack of understory herbaceous species. The land health evaluation for the allotment recommended the use of herbicide to reduce sagebrush density and create a more favorable balance of palatable shrubs, forbs and perennial grasses. Mechanical treatments were also recommended to reduce the near monocultures of pinyon-juniper and attain the plant community structure that is expected for the ecological site, and would be more desirable for this area – reducing pinyon-juniper competition through thinning would release desirable browse species such as cliffrose and Mormon tea, and seeding treatment would promote perennial grasses since these areas lack desirable herbaceous understory. Implementing these vegetation treatments would allow the allotment to meet Standard 3 so that productive and diverse communities of plant species are present, resulting in proper ecosystem function.

The area in and adjacent to the Shinarump Allotment is open to locatable mineral claims including brecca pipe minerals and bentonite. Use of mineral material sites in the area, would cumulatively affect vegetation through the loss of vegetation, higher rates of erosion and sedimentation in drainages/waterways, increased deposition of dust on vegetation adjacent to roadways (i.e., haul routes), and introduction and spread of invasive plants. Reclamation activities would counter some of the reduction in vegetative cover, and preventative measures to inhibit the spread of invasive and noxious species could curtail infestation by species such as Scotch thistle.

The effects of livestock grazing on vegetation in the Shinarump Allotment have been analyzed under the “Direct and Indirect Effects” section of this chapter. Past, present, and reasonably foreseeable actions within the analysis area would continue to affect this resource, as described above. However, continuing to monitor plant communities and to implement the Arizona Standards for Rangeland Health should help ensure the long-term health of rangeland resources, including vegetation. While the allotment currently does not meet Standard 3 due to encroaching trees and increasing density of sagebrush (not due to livestock), and none of the alternatives are anticipated to change that determination, it is anticipated that the alternatives would not result in

cumulative impacts to vegetation resources when added to other past, present, and reasonably foreseeable activities in the area.

4.3.4 Cumulative Impacts to Wildlife

The cumulative impact analysis area for wildlife species is the Shinarump Allotment and adjacent lands within three miles. Actions that contribute cumulatively to the overall disturbance to wildlife and wildlife habitat include mineral development and various dispersed recreational activities. Mineral development has led to reduction of habitat quality and physical disturbance in a variety of habitats. Mining-related activities in the area of the Shinarump Allotment primarily include use of mineral material sites. Mineral development has led to reduction of habitat quality and physical disturbance in a variety of habitats.

Grazing occurs throughout the analysis area on numerous allotments with similar effects as those outlined in the direct and indirect impacts sections of this chapter. Utilization is limited to 45% on all allotments (including the Shinarump Allotment) without a rotational grazing system, providing for enough forage resources for wildlife populations to persist throughout the analysis area.

Recreational pursuits, particularly OHV use, have caused disturbance to most all species and their habitats. With the increase in local populations has come a dramatic increase in the level of OHV use, although the Shinarump Allotment receives little recreational use. In the southern portion of the allotment, a route has been laid out for developing a mountain bike trail along the Shinarump Cliffs. Recreational activities such as these result in increased disturbance, injury, and mortality to wildlife, particularly ground dwelling species with low mobility. Transportation corridors exist through the habitat of virtually all species found within the analysis area. Impacts vary by species and by the location, level of use, and speed of travel over the road.

The effects of livestock grazing on wildlife within the Shinarump Allotment have been analyzed under the "Direct and Indirect Effects" section of this chapter. In addition to livestock grazing, there are a wide variety of uses and activities occurring on the lands within and adjacent to the allotment, as described above. This additive impact may affect wildlife habitat or corridors and the greater ecosystems by altering vegetation associations. These systems and the health of the region as a whole are important for the survival of many native species. Consultation with AGFD in regard to renewal of the livestock grazing permit did not identify any issues directly related to livestock grazing beyond those already discussed above. While the allotment currently partially meets the applicable standards for rangeland health due to encroaching trees and increasing density of sagebrush (not due to livestock), and none of the alternatives are anticipated to change that determination, it is anticipated that the alternatives would not result in cumulative impacts to wildlife when added to other past, present, and reasonably foreseeable activities in the area.

4.4 Monitoring

DWR studies would be used to measure attainment of the key area DPC objectives. In addition, pace frequency studies would be used at each key area to detect changes of individual species which determines a trend or change in vegetation frequency. Pace frequency and DWR would

continue to be completed on the allotment's key area. DWR and pace frequency study methodologies are described in Sampling Vegetation Attributes, Interagency Technical Reference 1734-4 (BLM 1999a).

Livestock use on forage plants is determined by conducting grazing utilization studies using the Grazed-Class Method as described in the Utilization Studies and Residual Measurements Interagency Technical Reference 1734-3 (BLM 1999b). Utilization studies would be completed by the BLM when livestock are removed from the allotment. Study data would be compiled each year. Other information to be collected and compiled includes precipitation and actual use. All monitoring data would be used to evaluate current management of the allotment and assist the BLM in making management decisions that help achieve vegetation objectives.

The monitoring addressed above and in Chapter 2 is sufficient to identify changes in vegetation as a result of livestock grazing activities. In addition to those methods described, there are efforts in place to inventory for noxious weed establishment (see Table 3.4).

Chapter 5 – Consultation and Coordination

5.0 Consultation And Coordination

5.1 Introduction

This section summarizes the process used to involve individuals, organizations, and government agencies in the preparation of this EA.

5.2 Summary of Public Participation

Public involvement for the Shinarump Allotment permit renewal process began with a scoping meeting for the allotment's land health evaluation on January 29, 2002, followed by a field visit on May 17, 2002. The evaluation was conducted by an interdisciplinary assessment team of BLM resource specialists assisted by the Rangeland Resources Team appointed by the Arizona Resource Advisory Council. The evaluation report was sent out for public review and comment to individuals, groups, and agencies and serves as the scoping for this proposed grazing permit renewal. The BLM completed the land health evaluation report for the allotment in 2004. This EA reflects the analysis of the proposed grazing permit renewal on the Shinarump Allotment.

An EA was posted on the BLM ePlanning web page on July 13, 2021, for review; a notice of public comment period letter was sent to those persons and groups listed on the Arizona Strip interested publics mailing list notifying them of the availability of the EA for a 30-day review and comment period. No comments were received.

5.3 List of Preparers and Reviewers

Table 5.1 List of BLM Preparers/Reviewers

Name	Title	Responsible for the Following Program(s)
Lorraine Christian	Arizona Strip Field Manager	Authorizing Official
Brandon Boshell	Monument Manager/Assistant Field Manager	Project Oversight
Gloria Benson	Tribal Liaison	Native American Religious Concerns
Rody Cox	Geologist	Geology, Minerals
Amber Hughes	Planning & Environmental Coordinator	NEPA oversight
Stephanie Grischkowsky	Wildlife Biologist	Special Status Animals, Wildlife, Wetlands/Riparian
Jace Lambeth	Rangeland Management Specialist	Special Status Plants
Jon Jasper	Outdoor Recreation Planner	Wilderness, Recreation, Visual Resources
Sarah Page	Archaeologist	Cultural Resources
Ben Ott	Range Management Specialist	Vegetation, Grazing Administration, Invasive, Non-Native Species, Soils, Water, Air
John Sims	Supervisory Law Enforcement Ranger	Law Enforcement

Chapter 6 – References

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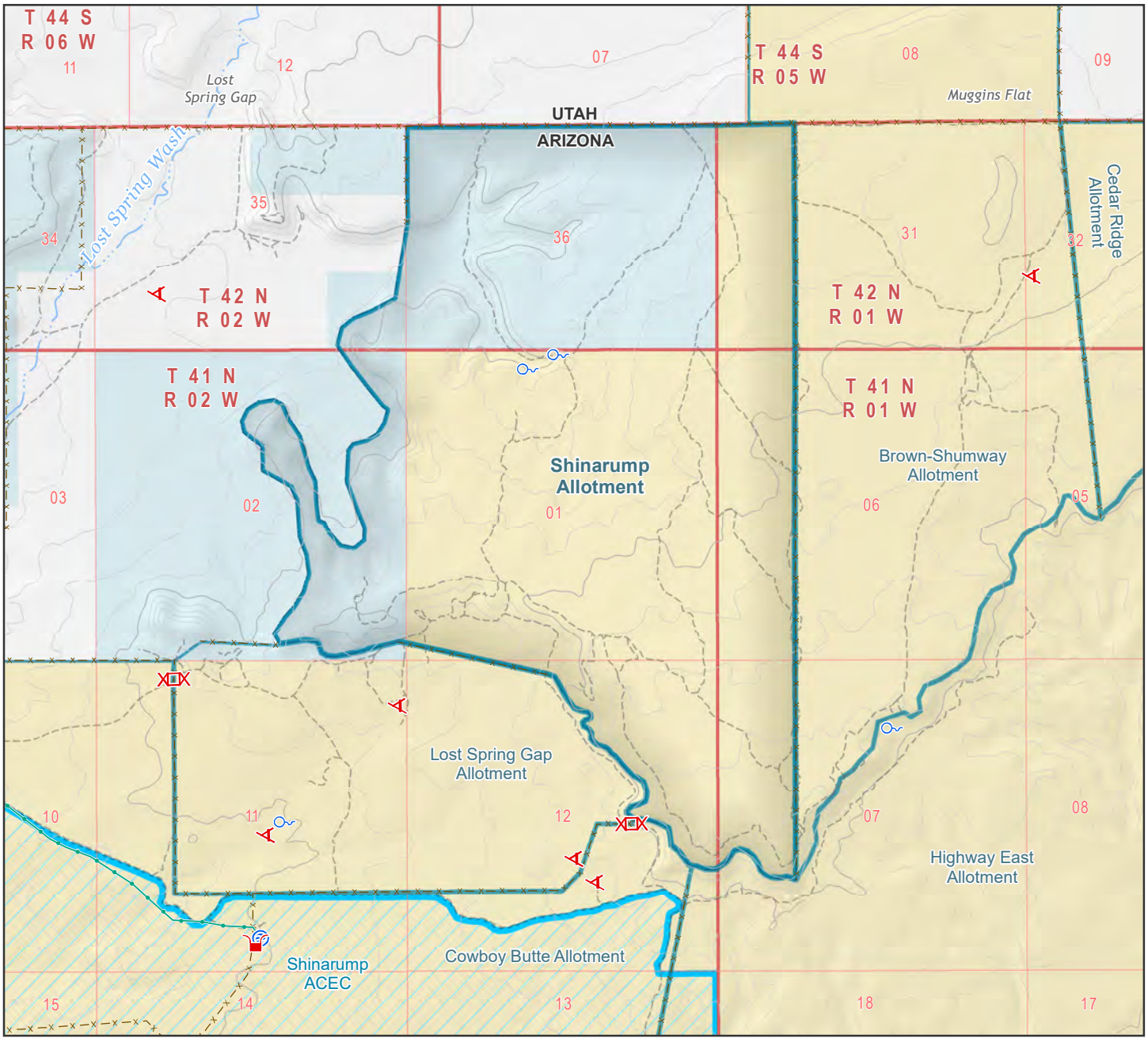
Appendix A - Shinarump Allotment Location

NEPA Project DOI-BLM-AZ-A010-2021-0019-EA

Bureau of Land Management - Arizona Strip District - Arizona Strip Field Office



- Grazing Allotment

Range Development Point

- Spring
- Unfenced Detention Reservoir
- Supplemental Storage Tank
- Trough
- Cattleguard

Range Development Line

- Fence
- Pipeline

Surface Management

- Bureau of Land Management
- State
- Private
- Area of Critical Environmental Concern (ACEC)
- PLSS Township
- PLSS Section

Arizona Strip Routes

- Tertiary Road Unpaved

0 0.5 1 Miles

0 0.5 1 Kilometers

Map Produced by BLM Arizona Strip District
File: Map_Shinarump_GPR_2021.mxd
Coordinate System: NAD 1983 UTM Zone 12N
Reference System: U.S. PLSS GSRB&M
Scale: 1:31,000 at 8.5x11 page output
Date: 7/13/2021

No warranty is made by the Bureau of Land Management (BLM) regarding the accuracy or completeness of this map. This map is representational and is to be used as intended by the BLM. Map data compiled from various sources. This map and the data from which it was derived are not binding on the BLM and may be revised at any time.

APPENDIX B – Land Health Evaluation Update for the Shinarump Allotment - #4830

The Shinarump Allotment land health evaluation was completed on September 10, 2004. That evaluation determined all applicable standards for rangeland health on the allotment were being met[9]. This update constitutes a re-evaluation of the 2004 assessment determination by considering and analyzing new monitoring data.

DPC Objectives

The DPC objectives for the allotment were developed using the description of the ecological site guides for the key area. The DPCs reflect functional groups rather than specific plant species. Plant functional types are sets of plants exhibiting similar responses to environmental conditions and having similar effects on the dominant ecosystem processes (Gitay and Noble 1997). It is very difficult to manage large areas (such as a grazing allotment) for specific species because variations within such a large area can be quite dramatic (even within a single ecological site). By contrast, managing by functional groups allows range managers to study patterns of vegetation responses from plant groups that have similar life history strategies and responses to environmental stress and disturbance (McIntyre 1999), which is more useful on the allotment scale.

The DPCs for the Shinarump Allotment are:

> *Maintain in a Mid Seral stage, with 26 to 50 percent of the vegetation component found in the Potential Natural Community.*
>
> - *Increase perennial grass composition to between 70 – 80%.*
> - *Maintain forbs composition between 1-5%.*
> - *Decrease tree/shrub composition to between 15-20%.*

Rationale for these objectives: DPC objectives were developed that would ensure the biodiversity, health, and sustainability of wildlife species indigenous to this area; protection of ecological functions (including hydrological processes); and sustainability of diverse vegetative communities. These objectives are set according to the ecological site guides (developed by the NRCS) – to determine what was within the site potential for each key area – and the current composition at each site. The objectives were created with a "range" to account for fluctuations in plant populations due to factors such as drought and wet periods; this range also represents an achievable percentage given the ecological site guide potentials. It was determined that the DPC objectives identified above would result in healthy and diverse plant communities, which in turn would provide for the habitat needs (both forage and cover) of wildlife, protection for soils and hydrologic functions, and forage for livestock. While DPCs were established for forbs, it should be noted that their composition is highly variable and is influenced by spring and summer precipitation.

Monitoring

Trend monitoring data was most recently collected in 2017 and 2018. This monitoring data is summarized below.

[9] The DPCs were not met during the 2004 LHE process, for the same reason that they are not being met now. It is unclear why the 2004 LHE made the determination that all applicable standards for rangeland health were being met.

The original key area for this allotment was established in 1983 and re-read in 2004. Upon returning to monitor the key area was not locatable as identifiable features were removed and the key area had yet to be recorded in GIS. As such, a new key area was established. It was read for pace-frequency, trend and dry weight rank (DWR) in the years of 2017 and 2018. The frequency at the key area varied from 76% in 2017 to 68%[10] in 2018. Live vegetative cover decreased from 12% to 2.6%, while litter increased from 42% to 56%. Based on frequency data, trend is static at the key area.

Observations and data collected for the Shinarump Allotment indicate that the grazing system that includes private lands has resulted in widely dispersed grazing with good rest and recovery periods. It is believed that if the allotment is grazed during the dormant period (fall to early spring), conditions will continue to improve for the key species. This key area does not represent much of the allotment, as much of it is dense pinyon pine and juniper stands that are devoid of key species and becoming more decadent. Utilization has been moderate to most recently light (see Table 3.2. earlier in this EA).

The Shinarump Allotment would be managed to achieve the DPC (desired plant community) objectives listed above. As shown in Table B-1, this allotment evaluation update lists and evaluates achievement of the allotment's DPC objectives.

Table B-1. Desired Plant Community Objectives Determination - Key Area Ecological site: Loamy Upland 10-14" p.z.

Plant Group (or Ground Cover)	Current Composition	Desired Plant Composition	Objective Met or Not Met
Perennial Grass	51%	70-80%	Not Met
Galleta	29%		
Blue gramma	17%		
Squirreltail	4%		
Purple three-awn	1%		
Shrubs / Browse	50%	15-20%	Met (Exceeds)
Big sagebrush	36%		
Broom snakeweed	12%		
Whipple cholla	2%		
Forbs	0%	1-5%	Not Met

If Standard 1 is achieved, the health of the rangelands is not at risk (i.e., the rangelands do not show signs of accelerated soil erosion by wind or water).

If Standard 1 is not achieved, the health of the ecological site is at risk because of clear evidence of soil loss and hydrological function. Ground cover and signs of erosion are surrogate measures for hydrologic function, nutrient cycles, and energy flow. At risk rangelands show

[10] When referring to frequency monitoring results, the total number represents a combined percentage of many key species, relative to the number of quadrats (200), so can therefore exceed 100%.

evidence of soil movement and there is clear evidence of soil degradation and transport of nutrients, water, and organic matter off the site.

X Meeting the Standard at the Key Area.

Rationale:

This means that the watershed units currently are in satisfactory erosion condition but susceptible to wind and water erosion following disturbance. In addition, these soils have a low productivity rate, can be susceptible to compaction, and are moderately alkaline due to the slight leaching of salts.

Ground cover was measured at the key area; plants, litter, and rock are present in pattern, kind, and amount sufficient to prevent accelerated erosion. At the key area the ground cover increased from 2017 to 2018. Ecological status data indicates the key area is in mid-seral stage. However, pinyon-juniper occupies approximately 80 percent of the allotment in compositions ranging from near monocultures to shrub/pinyon-juniper mixes. Other areas of the allotment also have a high big sagebrush composition where understory is lacking. It is believed that chemical or mechanical treatment would be the most effective way to reduce the near monocultures of pinyon-juniper and sagebrush which would increase the herbaceous understory and prevent future soils and erosion problems. The determination of the key area is that it is functioning properly and meeting Standard #1.

Standard 2 (Riparian-Wetland Sites)

There are no riparian/wetland areas on federal lands within the Shinarump Allotment.

Standard 3 (Desired Resource Conditions)

If Standard 3 is achieved, ecological sites contain productive and diverse communities of native species, resulting in proper ecosystem function. Under Standard 3, when DPC objectives for wildlife habitat are being achieved, the site is producing desirable forage, cover and soil protection. For wildlife this means "healthy" rangeland should provide the necessary food and cover to sustain the species.

If Standard 3 is not achieved, the soil conditions and ecosystem function described in Standard 1 are at risk and may not be providing forage and habitat for threatened, endangered and sensitive wildlife species.

X Not Meeting Standard at the Key Area

Rationale:

The BLM determined that the key area was partially meeting Standard #3 for rangeland health. The plant composition was such that it partially met the desired plant community objectives for the key area. Based on ecological site descriptions developed by NRCS, the optimum structure

for the sagebrush/perennial grass community type should be 70 to 80 percent grass composition and approximately 15 percent sagebrush composition. Pinyon and juniper occupy approximately 80 percent of the Shinarump Allotment in compositions ranging from near monocultures to shrub/pinyon-juniper mixes. At the key area, perennial grass composition should range between 70-80%, but it is currently 51% due to the dominance by sagebrush; composition of sagebrush should be 15%, but it is currently 36%. Thus, the DPC objectives are not being met. Hence the determination that the allotment is partially meeting this standard (rather than meeting standards, as was stated in the 2004 report). It is important to note that the monitoring data used to develop the 2004 LHE report noted similar compositions of grasses and shrubs. Land health on the allotment has not changed since 2004; instead, the BLM feels it is making a more accurate land health determination.

Mechanical treatments or the use of herbicide would reduce sagebrush and create a more favorable balance of shrubs and perennial grasses at the key area and across other portions of the allotment. This would allow the allotment to attain the plant community structure that is expected for the ecological site and would be more desirable for this area, and thus meet this standard.

Recent observations of numerous pinyon pine seedlings encroaching into the shrub and grass community type indicate that the pinyon-juniper component is increasing in the allotment as well. As the pinyon-juniper canopy closes understory plants (i.e., shrubs, grasses and forbs) diminish, which is not the desired plant community structure either. To increase the composition of perennial grasses, treatments to remove trees would be necessary. Mechanical treatments would be the most effective way to reduce the near monocultures of pinyon-juniper and attain the plant community structure that is expected for the ecological site and would be more desirable for this area – reducing pinyon-juniper competition through thinning would release desirable browse species such as cliffrose and Mormon tea. Due to the lack of desirable browse and herbaceous understory in these pinyon-juniper monocultures, seeding would be needed in conjunction with the mechanical treatments.

Summary:

After considering all available data, the interdisciplinary assessment team (composed of various resource specialists – including rangeland management specialists, wildlife biologist, and soil scientist) is recommending that the Shinarump Allotment is partially meeting the applicable standards for rangeland health – Standard 1 is being met, Standard 3 is partially met due to sagebrush and pinyon-juniper encroachment. Treatments to reduce the encroaching trees and shrubs would allow the allotment to attain the plant community structure that is expected for the ecological site and would be more desirable for this area, and thus meet Standard 3.