Vulture Centennial Complex Grazing Permit Renewal

FINAL ENVIRONMENTAL ASSESSMENT

DOI-BLM-AZ-P010-2020-0005-EA

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June 2020

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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1.0 INTRODUCTION/PURPOSE AND NEED

1.1 Introduction

The Bureau of Land Management (BLM) is proposing to fully process the term grazing authorizations on the Garcia, Jones, Los Caballeros, and Cactus Garden allotments. A Rangeland Health Evaluation (RHE) was prepared for these four allotments in 2019 (Appendix B).

The Vulture Complex (Complex, Map 1) is located along south and southwest of the town of Wickenburg, Arizona. Vulture Mine Road bisects the Garcia and Jones allotments. The Los Caballeros and Cactus Garden allotments lie east of the Jones allotment, with a western boundary along the western bank of the Hassayampa River. The Garcia allotment lies north and south of the Jones allotment and extends east to the Hassayampa River north of the Los Caballeros and Cactus Garden allotments. The allotments analyzed in this document cover approximately 108,812 acres located in Maricopa County. BLM administered lands account for approximately 87,464 acres. The remainder is Arizona State Trust land (17,431 acres), and privately held lands (3,917 acres).

This Environmental Assessment (EA) has been prepared to analyze and disclose the potential environmental consequences associated with the Proposed Action and alternatives for livestock management on the Complex allotments. The analysis was conducted in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations (CFR) 1500-1508), and direction provided under BLM NEPA Handbook H-1790-1 (2008).

Allotment Profiles

Garcia Allotment

The Garcia Allotment contains two main pastures (Table 1). The southern Garcia pasture lies south of the Jones allotment, bisected by Vulture Mine Road, and runs south to the northern boundary of the Belmont Mountains. The southern pasture contains two smaller pastures, separating the area north of Aguila Road east of Vulture Mine Road. The northern Sitgreaves pasture lies north of the Jones Allotment, then continues east on the northern boundary of the Los Caballeros and Cactus garden allotments, south of Vulture Mine Road, to the Hassayampa River. The Sitgreaves pasture contains 2 additional interior pasture fences. The current permit holder for the Garcia Allotment is Sand Arroyo Ranch, Inc.

Jones Allotment

The Jones Allotment is bisected by Vulture Mine Road (Table 2). The historic Vulture Mine lies within the allotment boundaries. The allotment contains three pastures. The current permit holder for the Jones Allotment is Sand Arroyo Ranch, Inc.

Los Caballeros Allotment

The current permit holder for the Los Caballeros Allotment is Los Caballeros Ranch (Table 3). There is no formal rotation system in place on the allotment. Pasture fencing on the allotment is not mapped, however, there is a pasture division fence in the southern end of the allotment.

Cactus Garden Allotment
The current permit holder for the Cactus Garden Allotment is Spear B Livestock, under a base property lease from Crestone Ranches (Table 4). There is no formal rotation system in place on the Allotment, however, some pasture fencing is present.

The tables below list the allotment specifics. Grazing preference is expressed in Animal Unit Months, defined as the amount of forage necessary to sustain one cow-calf pair for one month. Preference is the amount of forage allocated to the grazing authorization.

Table 1: Garcia Profile.

Permittee	Sand Arroyo Ranch
Percent/Acres BLM Land	73% / 37,705
Percent/Acres State Land	24% / 12,339
Percent/Acres Private Land	3% / 1,802
Grazing Preference	3150 AUMs
Season of Use	Perennial
Number and class of livestock use	350 Cattle

Table 2: Jones Profile.

Permittee	Sand Arroyo Ranch
Percent/Acres BLM Land	98% / 26,998
Percent/Acres State Land	0
Percent/Acres Private Land	2% / 506
Grazing Preference	900 AUMs
Season of Use	Perennial
Number and class of livestock use	90 Cattle

Table 3: Los Caballeros Profile.

Permittee	Los Caballeros Ranch
Percent/Acres BLM Land	75% / 12,684
Percent/Acres State Land	20% / 3,497
Percent/Acres Private Land	5% / 793
Grazing Preference	939 AUMs
Season of Use	Perennial
Number and class of livestock use	101 Cattle/ 2 Horse

Table 4: Cactus Garden Allotment Profile.

Permittee	Spear B Livestock
Percent/Acres BLM Land	81% / 10,077
Percent/Acres State Land	13% / 1,595
Percent/Acres Private Land	6% / 816
Grazing Preference	1098 AUMs
Season of Use	Perennial
Number and class of livestock use	104 Cattle

1.2 Purpose and Need

The purpose of this action is to consider livestock grazing opportunities on public lands where consistent with management objectives, including the BLM *Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management* (Rangeland Health Standards) (BLM 1997).

The need for this action is established by the Taylor Grazing Act, the Federal Land Policy and Management Act, Fundamentals of Range Health (43 CFR 4180), and the Hassayampa Field Office (FO) Resource Management Plan (RMP) (BLM 2010) to respond to an application for renewal of an expiring livestock grazing permit or lease to graze livestock on public land. In detail, the analysis of the actions is needed because:

- The Bradshaw-Harquahala 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 Hassayampa FO. The RMP allocated public lands within the Complex as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP and Land Health Standards, the issuance of grazing permits or leases to qualified applicants are provided for by the Taylor Grazing Act and the Federal Land Policy and Management Act.

- BLM Arizona adopted the Arizona Rangeland Health Standards (Land Health Standards) and Guidelines for Livestock Grazing Management (Arizona S&Gs) in all Land Use Plans in 1997 (Appendix C). The Land Health Standards and Guidelines for Grazing Administration were also incorporated into the RMP. The allotments should be achieving or making significant progress toward achieving the standards. 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 RHE completed for the Complex determined that Standards 1 and 3 are met on the Complex, and Standard 2 does not apply to the Complex.

1.3 Scoping and Issue Identification

Internal scoping was conducted with BLM specialists in July 2019. External scoping was conducted via letters sent to individuals and organizations on the Consultation, Coordination, and Cooperation list. Recipients were asked to comment on the RHE and the Proposed Action. The scoping period for the Complex was from January 30 through February 15, 2020. A comment letter was received from Western Watersheds Project. These comments are summarized in Appendix A.

Issues for Analysis

For the purpose of BLM NEPA analysis, an "issue" is a point of disagreement, debate, or dispute with a Proposed Action based on some anticipated environmental effect. An issue is more than just a position statement, such as disagreement with grazing on public lands. An issue:

- Has a cause and effect relationship with the Proposed Action or alternatives;
- Is within the scope of the analysis;

- Has not been decided by law, regulation, or previous decision; and
- Is amenable to scientific analysis rather than conjecture.

For the purposes of this EA, the BLM analyzed issues if analysis of the issue is necessary to make a reasoned choice between alternatives, or the issue is significant or may have potentially significant effects (BLM 2008). The interdisciplinary team (IDT) carefully considered comments by BLM specialists, the permittee, and affected agencies in order to identify issues relevant to issuing a 10-year grazing permit or lease. The issues derived from internal and external scoping on technical recommendations of the Complex RHE (BLM 2018) are as follows:

Issue 1 –Upland vegetation: How would continued livestock grazing affect the health of upland vegetation?

Issue 2 –Wildlife: How would continued livestock grazing affect priority wildlife species and migratory birds?

1.4 Land Use Plan Conformance Statement

Rangeland management decisions in the Bradshaw-Harquahala RMP that pertain to the Proposed Action include:

Rangeland Management (GM)

Desired Future Conditions:

GM-1 "Rangeland conditions conform to the Land Health Standards described in Arizona Standards for Rangeland Health and Guidelines for Grazing Administration, which describe the desired conditions needed to encourage proper functioning of ecological processes. These standards are described in greater detail in the above section on Land Health Standards."

GM-2 "Watersheds are in properly functioning condition, including their upland, riparian, and aquatic components. Soil and plant conditions support infiltration, storage, and release of water that are in balance with climate and landform."

GM-3 "Ecological processes are maintained to support healthy biotic populations and communities."

Land Use Allocation

GM-4 "Administer 93 grazing authorizations within the grazing allotment boundaries shown on Map 13."

GM-5 "Public lands without a grazing permit or lease authorization will remain unauthorized for livestock grazing."

Management Actions

GM-6 "Build livestock control fences and alternative water sources where needed to meet natural resource objectives. Fence construction and maintenance will follow guidance provided in BLM's Handbook on Fencing No. 1741-1."

GM-8 “Inventory and/or monitoring studies are used to determine if adjustments to permitted use levels, terms and conditions, and management practices are necessary in order to meet and/or make significant progress towards meeting the Arizona Standards for Rangeland Health and other management objectives.”

GM-9 “Implement grazing management changes as needed to produce riparian areas that are in or making progress toward proper functioning condition.”

GM-11 “Range improvements needed for proper management of the grazing program will be determined and completed, including repair and/or installation of fences, cattle guards, water developments, and vehicle routes needed to access improvement areas.”

GM-12 “Vehicular access to repair range improvements by the grazing permittee or lessee is considered administrative access. Use of vehicle routes closed to public use, but limited to administrative uses, will be allowed to maintain or repair range improvements. Off-route vehicle use will require prior authorization unless the needed access is to resolve an immediate risk to human health, safety, or property.”

GM-13 “One-time travel off designated routes to access or retrieve sick or injured livestock would be authorized as an administrative use for transporting the animal to obtain medical help.”

GM-14 “Management practices to achieve Desired Plant Communities (DPCs) will consider protecting and conserving known cultural resources, including historical sites, prehistoric sites, and plants of significance to Native American people.”

GM-15 “Apply management actions outlined in the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (Arizona Standards for Rangeland Health) to recognize and correct potential erosion problems that could degrade other resources, with prioritized emphasis on sites that might directly affect species that have been listed as threatened, endangered, or candidate by the United States Fish and Wildlife Service (USFWS).”

Guidelines for Standard One

GM-17 “Management activities will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage, and soil stability appropriate for the ecological sites. The ground cover should maintain soil organisms, plants, and animals to support the hydrologic and nutrient cycles and energy flow. Ground cover and signs of erosion are surrogate measures for hydrologic and nutrient cycles, and energy flow.”

Guidelines for Standard Two

GM-19 “Management practices maintain or promote sufficient vegetation to maintain, improve, or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge, and stream bank stability, thus promoting stream channel morphology (e.g. gradient, width/depth ratio, channel roughness, and sinuosity), and functions suitable to climate and landform.”

Guidelines for Standard Three

> GM-27 "DPC objectives will be quantified for each allotment through the rangeland monitoring and evaluation process. Ecological site descriptions available through the Natural Resources Conservation Service and other data will be used as a guide for addressing site capabilities and potentials for change over time. These DPC objectives are vegetation values that BLM is managing over the long term. Once established, DPC objectives will be updated and monitored by the use of indicators for Land Health Standard Three."

1.5 Relationships to Statutes, Regulations, Manuals and Other Plans

The Taylor Grazing Act and the Federal Land Policy and Management Act (FLPMA) recognize grazing as a valid use of the public lands and require BLM to manage livestock grazing in the context of multiple use and sustained yield. Additionally, livestock grazing on public lands is managed according to grazing regulations found in the Code of Federal Regulations (at 43 CFR Part 4100).

The Taylor Grazing Act of 1934 provides for two types of authorized use: (1) a grazing permit, which is a document authorizing use of the public lands within an established grazing district, and are administered in accordance with Section 3 of the Taylor Grazing Act; and (2) a grazing lease, which is a document authorizing use of the public lands outside an established grazing district, and are administered in accordance with Section 15 of the Taylor Grazing Act. The Complex grazing allotments are Section 3 permits.

Title 43 CFR 4100.0-8 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." Title 43 CFR 4130.2(a) 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 Proposed Action is consistent with the Fundamentals of Rangeland Health (43 CFR 4180.1) and Rangeland Health Standards, 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.

Additionally, the following pertinent laws and/or agency regulations also apply:

- 43 CFR 4100 Grazing Administration -Exclusive of Alaska
- Taylor Grazing Act of 1934
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.)
- Public Rangelands Improvement Act of 1978
- Endangered Species Act of 1973, as amended
- Section 106 of the National Historic Preservation Act of 1966, as amended
- National Environmental Policy Act of 1969

- Migratory Bird Treaty Act of 1917, and Executive Order 13186 –*Responsibilities of Federal Agencies to Protect Migratory Birds*

1.6 Decision to be Made

The Hassayampa Field Manager is the Authorized Officer responsible for the decisions regarding management of public lands within the Complex allotments. This analysis would help to inform the decision to renew, renew with modifications, or not renew the leases and permits. If renewed, management actions, mitigation measures, and/or monitoring requirements would be prescribed to ensure management objectives and Rangeland Health Standards continue to be achieved or make progress towards achievement on the Complex allotments.

2.0 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the alternatives to be analyzed in detail in Chapter 3.0. The IDT developed three alternatives: 1). Proposed Action; 2). No Action; and 3). No Grazing, based on the analysis and technical recommendations presented in the Complex RHE (Appendix B), and to respond to issues identified during scoping. The alternatives are designed to meet the purpose and need for action, conform to existing land use plans, and satisfy the legal and regulatory requirements for rangeland management.

Actions Common to All Action Alternatives

The following actions apply to each of the action alternatives below.

Arizona Standards for Rangeland Health

All the alternatives were designed to meet the following objectives, as described in the Rangeland Health Standards:

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.
3. Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

Stipulations

No new road construction would be permitted in conjunction with the alternatives. Routine maintenance would be performed on existing range improvements as needed.

2.1 Proposed Action

The Proposed Action is to renew the Garcia, Jones, Los Caballeros, and Cactus Garden grazing authorizations for a period of 10-years with the following terms and conditions (Table 5). Percent public land, which is the percentage of forage on public lands as opposed to other land ownerships, has been recalculated to account for current agricultural and State lease stocking rates. The Animal Unit Months (AUMs) on public lands are the same as the current grazing authorization, with the addition of Other Terms and Conditions, as described below.

Table 5: Proposed Mandatory Terms and Conditions.

Allotment	Pasture	Livestock Number	Livestock Kind	Grazing Period	Percent Public Land	Animal Unit Months
Garcia	N/A	302	Cattle	3/1-2/28	87	3,150
Garcia	Sitgreaves	0	Sheep	3/1-2/28	87	Ephemeral
Jones	N/A	75	Cattle	3/1-2/28	100	900
Los Caballeros	N/A	98	Cattle	3/1-2/28	79	921
Los Caballeros	N/A	2	Horse	3/1-2/28	79	18
Cactus Garden	N/A	107	Cattle	3/1-2/28	86	1,098

Other Terms and Conditions

Standard terms and conditions are found on Grazing Permit/Lease Form 4130-2a. In addition to the mandatory terms and conditions, other terms and conditions would be added to the grazing authorizations under the Proposed Action:

1. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. When used, these supplements must be placed a minimum of two miles from southwestern willow flycatcher critical habitat and yellow-billed cuckoo proposed critical habitat, one quarter (1/4) of a mile from livestock water sources, and one-eighth (1/8) of a mile from major drainages and identified areas of wildlife resources or cultural resource concerns. This includes the following habitat features within Sonoran desert tortoise (*Gopherus morafkai*) Category 2 habitat: hillsides and ridges with outcrops of large rocks and boulders as well as areas with incised washes and caliche caves.
2. The permittee must properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4230-5) annually and at the termination of all ephemeral use. The completed form(s) must be submitted to the BLM, Hassayampa Field Office (HFO) within 15 days from the last day of authorized annual grazing use (43 CFR 4130.3-2 (d)).
3. If in connection with allotment operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001) are discovered, the permittee shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the authorized officer of the discovery. The permittee shall continue to protect the immediate area of the discovery until notified by the authorized officer that operations may resume.
4. To avoid take of migratory birds, any vegetation clearing required for constructing range improvements should occur outside of the migratory bird breeding season (February 15 – August 1). If vegetation is cleared during the nesting season, the vegetation to be cleared shall be surveyed for active migratory bird nests by a qualified biologist. If active nests are found, they should be avoided until the young have fledged.

Other Terms and Conditions Specific to the Garcia and Cactus Garden Allotments

5. To reduce livestock grazing pressure in and near southwestern willow flycatcher critical habitat and yellow-billed cuckoo proposed critical habitat, any salt or other supplements must be placed at least two miles from designated or proposed critical habitat.

Range Improvements

To facilitate orderly management of the range, new fencing and water sources are proposed to be located on the Garcia Allotment. Fencing is proposed along Vulture Mine and Aguila roads to split the larger Garcia pasture and to reduce livestock collisions along the currently unfenced right of way.

Fencing along Vulture and Aguila roads would be approximately 8 miles, with approximately 4.5 miles of fence on public lands and 3.5 miles on state lands. The fencing would conform to BLM and State fencing standards, consisting of four wires with the lowest wire being barbless strand a minimum of 18 inches above ground. Construction of this improvement would be contingent on approval for fence placement on State Trust lands.

Under the Proposed Action, the livestock water known as Garcia Well would be relocated outside of the 1,093-acre Vulture Recreation & Public Purposes Act (R&PP) lease area. This range improvement contains a well, corral, storage tank, and troughs within the corral. The existing improvement contains a windmill and generator run pump. At the relocation site, solar power would be utilized to pump water from a new well. The existing corrals, storage tank, and troughs would be moved to the new location, or replaced as necessary.

On the Los Caballeros Allotment, refurbishment of an existing livestock water is proposed. Due to the level of work expected to refurbish the facility, these repairs would not be considered routine maintenance.

The proposed improvements are shown on Map 2.

2.2 No Action Alternative

A No Action Alternative is developed for two reasons. First, the No Action Alternative represents a choice in the range of management alternatives. Second, because a No Action Alternative represents the continuation of current management actions, it provides a benchmark of existing impacts continued into the future against which to compare the impacts of the other proposed management alternatives.

The No Action Alternative would renew the Garcia, Jones, Los Caballeros, and Cactus Garden grazing authorizations for a period of 10-years with the same terms and conditions as shown in Tables 1 through 5. No new range improvements would be constructed. Maintenance on existing improvements would continue as necessary.

2.3 No Grazing Alternative

This alternative was developed to address unresolved conflicts concerning alternative uses of available resources, in this case, alternative uses of forage (40 CFR 1501.2(c)). Under the No Grazing alternative, the BLM would not authorize grazing in the Garcia, Jones, Los Caballeros, or Cactus Garden allotments for a 10-year term and all AUMs for active preference would not be available for livestock grazing on public lands (i.e. livestock grazing would be deferred for the 10-year permit period). No new range improvement projects would be constructed and no maintenance would occur on existing projects.

2.4 Alternatives Considered but Eliminated From Detailed Analysis

Reduced Grazing Alternative

The IDT reviewed a “reduced grazing” alternative. The purpose of the alternative was to consider whether reducing the livestock stocking rate on the allotments presented a viable means of meeting the purpose and need for this action.

Rather than select an arbitrary number or percentage of reduction, the BLM typically uses a “desired stocking rate analysis” (Holechek 1988) to estimate livestock carrying capacity on the allotments. A stocking rate analysis provides a non-arbitrary and objective method to identify alternative possible stocking rates on an allotment. This analysis identifies stocking rates based on a desired utilization percent of key forage species.

Utilization on the perennial allotments by livestock was low on most areas, and stocking rates have varied as allotments were sold. Based on the utilization levels and stocking rate data, a reduction in the stocking rate was not warranted.

Ephemeral Use Only Alternative

The IDT reviewed an "ephemeral use only" alternative for the allotments. Due to the rainfall regime in the area, and the presence of ephemeral use only allotments in the vicinity, the IDT sought to determine if all of the allotments within the Complex met the requirements of the Special Ephemeral Rule.

Application of the Special Ephemeral Rule requires vegetation inventory data by species production on each allotment. The most recent inventory was used for the 1986 grazing Environmental Impact Statement, which found that these allotments did not meet all the requirements for Ephemeral Only designation. Without a more recent inventory, and current vegetation data indicating the presence of adequate forage species, this alternative was eliminated from further analysis.

3.0 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the Proposed Action or No Action Alternative. The Affected Environment is the same for all alternatives (Map 1).

This chapter describes the potential direct, indirect, and residual effects to resources that may result from the Proposed Action or No Action Alternative, as well as identifies the potential monitoring needs associated with the specific resources.

3.1 Types of Effects

This chapter describes the potential direct, indirect, and residual effects to resources that may result from the Proposed Action or Alternatives, as well as identifies the potential monitoring needs associated with the specific resources. In this document, the word "adverse" is used in characterizing minor (non-significant) detrimental effects to a resource, and "negligible" is used in characterizing minor (non-significant) detrimental effects to a resource that are generally undetectable. "Beneficial" effects would have a positive effect on the resource. In this document, the terms "effect" and "impact" are used synonymously. Assessment of effects can be for short-term (generally considered during Project implementation) or the long-term. Effects fall into two categories, direct (caused by the action, same time and place) and indirect (caused by the action, but later in time or further in distance).

3.2 General Setting

The Complex is located northwest of Phoenix, Arizona, with the town of Wickenburg, Arizona located north to northeast of the allotments. Access to the Garcia and Jones allotments is primarily from Vulture Mine, Aguila, and Wickenburg roads. Access to the Los Caballeros Allotment is primarily from Vulture Peak road. Access to the Cactus Garden Allotment is primarily from Gates road in Morristown, Arizona.

The Complex comprises approximately 108,812 acres of mixed ownership land located in Maricopa County. Approximately 87,454 acres of the Complex are BLM-administered lands. Specific acreages are given in Section 1.0. Legal descriptions of the leased lands are given in Table 7, below.

Table 7: Legal Descriptions of Permitted Public Lands.

Allotment	Township	Range	Sections
Garcia	3N	6W	Portions of Sections 3, 4, 5
	4N	6W	Section 1, 3, 7-17, 21-24, 28, 33 and portions of sections 18, 19, 20, 27, 29, 32, 34
	5N	6W	Sections 13-15, 17, 18, 20-27, 34, 35 and portions of section 19
	6N	5W	Sections 5-8 and portions of sections 4, 9, 18
	6N	6W	Sections 1-4, 9-14 and portions of sections 5, 8, 15
	7N	4W	Section 30 and portions of sections 19, 20, 28, 29 31, 33
Jones	5N	6W	Sections 3-12 and portions of section 1 and 2
	6N	5W	Sections 17, 19, 20, 29-30, 32 and portions of sections 16, 18, 21, 28, 31, 33
	6N	6W	Sections 16, 17, 19-34 and portions of sections 15, 18, 35, 36
Los Caballeros	6N	4W	Portions of sections 19 and 20
	6N	5W	Sections 2, 3, 10, 11, 14, 15, 22, 23, 26, 27, 34, 35 and portions of sections 1, 4, 9, 12, 13, 16, 21, 24, 25, 28, 33
Cactus Garden	6N	4W	Sections 4-7, 9, 18, 20, 28, 29 and portions of sections 3, 8, 11, 15, 16, 17, 19, 21, 22, 30
	6N	5W	Portions of sections 1, 12, 13, 24
	7N	4W	Portions of sections 31 and 33

The terrain of the Complex varies from alluvial plains to moderately steep and steep mountain grades. Elevations on the Garcia Allotment range from 3,660 feet at Vulture peak, to 1,500 feet on the Hassayampa Plain. Elevations on the Jones Allotment range from approximately 2,800 feet at the northern end of the allotment, to 1,900- 2,200 feet across most of the allotment. Elevations on the Los Caballeros and Cactus Garden allotments fall between 2,000-2,300 feet on alluvial plains in the south, up to approximately 3,000 feet in the hills east of the Vulture Mountains.

Climate within the Complex is typical of the 7-10 inch precipitation zone of the Sonoran Desert. Rainfall is bimodal, comprising winter rains and summer monsoons. Limited rainfall is expected during the spring and later fall months. Temperatures in the summer months are hot, with mild winters and few days of frost (Appendix B).

Supplemental Authorities

Appendix 1 of BLM's NEPA Handbook (H-1790-1) identifies supplemental authorities that are subject to requirements specified by statute or executive order and must be considered in all BLM environmental documents (BLM 2008). Table 8 lists the Supplemental Authorities and their status in the Project Area. Supplemental authorities that may be affected by the Proposed Action or No Action Alternative are further described in this EA.

Table 8. Supplemental Authorities*.

Resource	Present Yes/No	May be Affected Yes/No/ Not Applicable (N/A)	Rationale for Not Analyzing Resources in Detail
Air Quality	Y	N	Portions of the Complex are within a non-attainment air basin for 8-Hour Ozone (O_3). The primary cause of Ozone is motorized vehicle emissions. All other regulated pollutants are in attainment. This non-attainment area encompasses the nine million-acre Phoenix metropolitan area with a population of more than four million people. Under the Proposed Action, during construction of the range improvements there would negligible particulates (fugitive dust) and emissions from vehicles and equipment. Under the Proposed Action, livestock grazing in the allotments would continue. Livestock operations, by use of motorized vehicles and equipment, contributes negligible particulates (fugitive dust) and emissions. Livestock grazing would continue to contribute negligible amounts of methane. No detailed analysis is warranted.
Areas of Critical Environmental Concern	Y	N	The Complex encompasses the Vulture Mountains ACEC, designated for raptors nesting on the cliff faces of Vulture Peak. There are no impacts to the ACEC as Livestock are not able to access these cliffs. No detailed analysis is warranted.
Cultural Resources	Y	N	Under the Proposed Action, the continuation of livestock grazing would have no adverse effect to historic properties in the allotments. The BLM has completed a Class III cultural resources inventory for the range improvements and determined no historic properties would be affected (BLM-020-17-127). No detailed analysis is warranted.
Environmental Justice	N	N/A	Resource Not Present.
Farm Lands (prime or unique)	N	N/A	Resource Not Present.
Floodplains	N	N/A	Resource Not Present.

Resource	Present Yes/No	May be Affected Yes/No/ Not Applicable (N/A)	Rationale for Not Analyzing Resources in Detail
Noxious and Invasive Weeds	Y	N	Although noxious and invasive weeds are present in the allotments, none of the Proposed Action would significantly increase the potential spread of existing weed populations. Any changes in weed populations would be addressed through the Phoenix District Integrated Weed Management Plan (BLM 2015). No detailed analysis is warranted.
Migratory Birds	Y	Y	Carried Forward for Analysis. See Section 3.2.3.
Native American Religious Concerns	N	N/A	The Proposed Action would have no effect on access to sacred sites, if present.
Threatened or Endangered Species	Y	Y	Carried forward for analysis. See Section 3.2.3
Wastes, Hazardous or Solid	N	N/A	Resource Not Present.
Water Quality (Surface/Ground)	N	N/A	Resource Not Present.
Wetlands/Riparian Zones	N	N/A	Resource Not Present.
Wild and Scenic Rivers	N	N/A	Resource Not Present.
Wilderness	N	N	No designated wilderness areas occur within the Complex.

**See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered.*
Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document. Supplemental Authorities determined to be Present/May Be Affected may be carried forward in the document.

Resources or Uses Other Than Supplemental Authorities

BLM specialists have evaluated the potential impact of the Proposed Action or No Action Alternative on these resources and documented their findings Table 9. Resources or uses that may be affected by the Proposed Action or No Action Alternative are further described in this EA (BLM 2008).

Table 9. Resources or Uses Other Than Supplemental Authorities.

Resource or Issue**	Present Yes/No	May be Affected Yes/No/ Not Applicable (N/A)	Rationale for Not Analyzing Resources in Detail
BLM Sensitive Species (animals)	Y	Y	Carried Forward for Analysis. See Section 3.2.3.
BLM Sensitive Species (plants)	N	N/A	Resource Not Present.
General Wildlife	Y	Y	Carried Forward for Analysis. See Section 3.2.3.
Lands and Realty	Y	N	Although existing rights-of-way occur in the allotments, under the Proposed Action, the continuation of livestock grazing and new range improvements would have no impact on existing or consideration of future authorizations. No detailed analysis is warranted.

Resource	Present Yes/No	May be Affected Yes/No/ Not Applicable (N/A)	Rationale for Not Analyzing Resources in Detail
Lands with Wilderness Characteristics	N	N/A	Resource Not Present.
Minerals	N	N/A	Resource Not Present.
Paleontological	N	N/A	Resource Not Present.
Recreation	Y	N	Although dispersed recreation occurs throughout the Complex, under the Proposed Action the continuation of livestock grazing and new range improvements would have no effect on these authorizations. No detailed analysis is warranted.
Socioeconomics	Y	N	Under the No Grazing Alternative, the removal of permitted livestock grazing from the allotments would have an adverse impact to the grazing lessee, and the negligible contribution to economic input in the county. No detailed analysis is warranted.
Soils	Y	Y	Carried Forward for Analysis. See Section 3.2.5.
Travel Management	Y	N	Although routes exist in the Complex for public access, under the Proposed Action the continuation of livestock grazing and new range improvements would have no impact to travel through the allotments. No detailed analysis is warranted.
Vegetation	Y	Y	Carried Forward for Analysis. See Section 3.2.2.
Visual Resource Management	Y	N	Although portions of the Complex are designated as VRM Class I, II, III or IV, under the Proposed Action the continuation of livestock grazing and new range improvements would not alter the visual character of the Complex. Under the Proposed Action, all range improvements would be constructed in VRM Class III which allows for moderate changes to the visual quality, and would be adjacent to existing canals or roads where localized surface disturbances have already occurred. No detailed analysis is warranted.
Wild Horses and Burros	N	N/A	Resource Not Present.

***Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document. Resources or uses determined to be Present/May Be Affected may be carried forward in the document.*

Resources Considered for Analysis

The following resources are or may be present in the Project Area and may be affected by the Proposed Action or No Action Alternative.

3.2.1 Vegetation Resources

This section discloses the impacts of livestock grazing on upland vegetation within the Complex allotments. This section also responds to the following issues identified in Chapter 1:

Issue 1 – Upland vegetation: How would continued livestock grazing affect the health of upland vegetation?

The BLM develops RHEs to determine whether standards are being achieved on a grazing allotment and to determine if livestock grazing is a causal factor for not achieving, or failing to make significant progress toward achieving, land health standards. Land Health Standard 3 is specific to upland vegetation and is evaluated based on vegetation monitoring within the Complex allotments.

Upland vegetation monitoring of the Complex allotments shows a vegetation community structure typical of the 7-10 inch precipitation zone of the Sonoran Desert.

Floodplains and flats within the Complex show a creosote and shrub dominant aspect, with grasses and perennial forbs generally limited to areas with increased moisture retention, such as swales or soils with an increased clay content, such as Garcia Key Areas 4 and 3L. The dominant plant species on these areas include creosote (*Larrea tridentata*), bursage species (*Ambrosia* sp.), ratany (*Krameria* sp.), and palo verde (*Parkinsonia* sp.), as shown at Jones Key Areas 1, 2, and 5. Grasses, while limited on the lower elevations, are typically big galleta (*Pleuraphis* sp.) and three-awn species (*Aristida* sp.).

The mountainous areas of the Complex have a generally shrubby aspect, with dominant shrub and tree species being palo verde, bursage species, brittlebush (*Encelia* sp.), and jojoba (*Simmondsia* sp.) as shown in the monitoring data for Los Caballeros Key Area 1 and 2, and Garcia Key Area 1. Grasses primarily consist of big galleta, with some key areas also showing occurrence of fluffgrass (*Dasyochloa pulchella*), sprangletop (*Leptochloa* sp.), and slim tridens (*Tridens muticus*). At lower elevations and on toeslopes, creosote and cholla (*Cylindropuntia* sp.) are also present, as shown in the monitoring data for Garcia Key Area 1, Jones Key Area 1, and Los Caballeros Key Area 1.

Key Areas were established in 1983, 2009 and 2018 to determine whether indicators of ecological processes conform to the Land Health Standards. A Key Area is an indicator area that represents a larger ecological site. Key Areas reflect the current grazing management over similar areas in the unit and serve as representative samples of range condition, trend, use and production. A total of fourteen Key Areas are currently active on the Complex.

Desired Plant Community (DPC) objectives were established for each Key Area on the Complex. These objectives are based on the potential vegetation community on each ecological site, as limited by factors such as rainfall regime, drought effects, and the potential for the ecological site to produce forage for wildlife. DPC objectives are the measurement of attainment for Standard 3 for each Key Area. DPC objectives are designed to meet or exceed habitat requirements for wildlife species such as mule deer and Sonoran desert tortoise when the ecological site has the potential to do so.

The RHE (Appendix B) determined that Standard 3 was achieved on the Complex with the exception of Key Area 3L on the Garcia Allotment. All DPC objectives were met at Jones Key Area 1, 2, 3 and 5, Garcia Key Area 3S, and all Key Areas on the Los Caballeros and Cactus Garden Allotments. Vegetative cover objectives were not met at Garcia Key Area 4. Perennial grass objectives were not achieved on Jones Key Area 4 and Garcia Key Area 1 and 3L. Browse composition objectives were not met at Garcia Key Area 3L. Bare ground cover class objectives were not met at Garcia Key Area 3L.

Current utilization measurements on the Complex indicate low levels of use on the allotments. Utilization levels are unlikely to have caused the non-achievement of DPC objectives. Prolonged drought in the area, combined with the low expected rainfall regime, reduces the potential for vegetation recruitment and adversely impacts vegetation cover production.

3.2.2 Environmental Consequences for Vegetation Resources

Proposed Action

Under the Proposed Action, upland vegetation is expected to maintain its current visual aspect. Livestock would continue to produce a negligible adverse effect on the vegetation on the allotments within the Complex. Livestock affect vegetation by removal of canopy cover through grazing and trampling. The proposed stocking rates are designed to maintain livestock utilization at levels that do not adversely impact vegetation recovery and recruitment.

Relocation of the Garcia well facility will have localized adverse effects on the vegetation community. Construction of the replacement corral would cause destruction of most vegetation within the footprint of the facility, comprising approximately one acre. This accounts for approximately 0.002 percent of the public lands within the allotment. The area serviced by this replacement facility significantly overlaps the area serviced by the existing facility.

Reconstruction of water facilities on the Los Caballeros Allotment will have negligible adverse effects on the vegetation community. Improved livestock distribution on the allotment will have negligible positive effects on the vegetation community and reduce grazing pressure on key species within the allotment.

Installation of semi-porous rock dams in areas showing increased downcutting and erosion will serve to slow water flow patterns, retain sediment, and increase soil moisture retention. This will increase available moisture for vegetation recruitment and growth in these areas.

No Action Alternative

Under the No Action Alternative, livestock would be reauthorized on the Complex at current stocking rates. No new range improvements would be authorized for construction. Livestock grazing pressure around waters outside of the R&PP lease area would increase negligibly.

DPC objectives that were not met at the Key Areas would continue to be unmet, with little to no expectation of improvement with continued extended drought conditions. Recruitment of vegetation would be limited by current use patterns and extended drought conditions.

No Grazing Alternative

Upland vegetation would have the most rest and recovery under a No Grazing Alternative. Vegetative recovery would be limited due to the extended drought coupled with the low rainfall regimes on the Complex. Because no livestock grazing would occur, plants would remain ungrazed by livestock, with the only browse pressure coming from wildlife. Grasses would see greater benefit compared to the other alternatives because grazing pressure would not impede their ability to fix carbon and produce and set seed.

The plants that would most benefit from the No Grazing Alternative are shrub species. Current year's growth – the leaves and young stems that are important for photosynthesis – is the most digestible part of the plant and is the portion generally removed by browsing animals. The buds are especially important to protect from grazing because they would be the source of new stems. Under this alternative, upland vegetation would improve the most in productivity, vigor, species composition, and formation of new stems compared to the other alternatives.

3.2.3 Wildlife Resources

This section discloses the impacts of livestock grazing on wildlife resources within the Complex. This section also responds to the following issues identified in Chapter 1:

Issue 2 –Wildlife: How would continued livestock grazing affect priority wildlife species and migratory birds?

General Wildlife Species

Wildlife species that occur within the Complex are typical and representative of the vegetative communities and topography present in the area. Species present include, but are not limited to, mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), javelina (*Pecari tajacu*), mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), desert cottontail (*Sylvilagus audubonii)*, black-tailed jackrabbits (*Lepus californicus*), Gambel's quail (*Callipepla gambelii*), great horned owls (*Bubo virginianus*), and various reptiles, small mammals, bats, and migratory birds.

Mule deer and javelina are big game species that utilize the Complex. Mule deer rely heavily on browse and forbs, which make up the majority of their diet (greater than 90 percent). Grasses and succulents were generally less than five percent of mule deer diet (Krausman et al. 1997, Heffelfinger et al. 2006). Desired forage species for mule deer that exists in the Complex include: range ratany (*Krameria erecta*), flattop buckwheat (*Eriogonum fasiculatum*), white bursage (*Ambrosia dumosa*), catclaw acacia (*Acacia greggii*), sweetbuch bebbia (*Bebbia juncia*), ocotillo (*Fouquieria splendens*), wolfberry (*Lycium andersonii*), ironwood (*Olneya tesota*), little leaf palo verde (*Parkinsonia microphylla*), velvet mesquite (*Prosopis velutina*), and trixis (*Trixis californica*), and succulents including barrel cactus (*Ferocactus wislizeni*), buckhorn cholla (*Cylindropuntia acanthocarpa*), and hedgehog cacti (*Echinocereus* sp.).

Migratory Birds

Migratory birds found within the Complex are typical of Sonoran Desert habitat. Species present include, but are not limited to, Gila woodpecker (*Melanerpes uropygialis*), Bendire's thrasher (*Toxostoma bendirei*), Costa's hummingbird (*Calypte costae*), prairie falcon (*Falco mexicanus*), ash-throated flycatcher (*Myiarchus cinerascens*), curve-billed thrasher (*Toxostoma curvirostre*),

loggerhead shrike (*Lanius ludovicianus*), white-winged dove (*Zenaida asiatica*) and mourning dove (*Zenaida macroura*).

Special Status Species

Special status species include federally listed, candidate and proposed species as well as BLM sensitive species.

Federally- Listed Species

The Garcia and Cactus Garden allotments are adjacent to occupied habitat for the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and the threatened yellow-billed cuckoo (*Coccyzus americanus*) along the Hassayampa River. The Complex of grazing allotments does not include the Hassayampa River and its associated riparian habitat. Livestock within the complex are excluded from the Hassayampa River and its associated riparian habitat by pasture fencing and the railroad right-of-way fencing that is located between occupied habitat and the upland habitat that is grazed by livestock in the Complex. Small portions of critical habitat for southwestern willow flycatcher, and proposed critical habitat for yellow-billed cuckoo, occur on the Complex west of the railroad tracks where ephemeral drainages intersect the railroad embankment. Increased soil moisture in these areas support patches of vegetation that are denser than the surrounding upland habitat (Figures 3-5). These dense patches of vegetation consist primarily of mesquite (*Prosopis sp.*) thickets. Of the 468-acre Hassayampa River southwestern willow flycatcher critical habitat unit, there is a single 0.9-acre patch of critical habitat on the Cactus Garden Allotment (0.2 percent of the critical habitat unit). Of the 2,838-acre Hassayampa River yellow-billed cuckoo proposed critical habitat unit 14, the Complex contains 7.2 acres of proposed critical habitat (0.3 percent of the proposed critical habitat unit). There are two patches of yellow billed cuckoo proposed critical habitat on the Garcia allotment (a 2.8-acre patch, and a 1.3-acre patch) and a single 3.1-acre patch of proposed critical habitat on the Cactus Garden Allotment (Table 10).

Table 10. Acres of Southwestern Willow Flycatcher (SWFL) Critical Habitat (CH) and Yellow-Billed cuckoo (YBCU) Proposed Critical Habitat (PCH) on the Complex.

Allotment	SWFL CH (acres)	YBCU PCH (acres)
Garcia	0	4.1
Cactus Garden	0.9	3.1

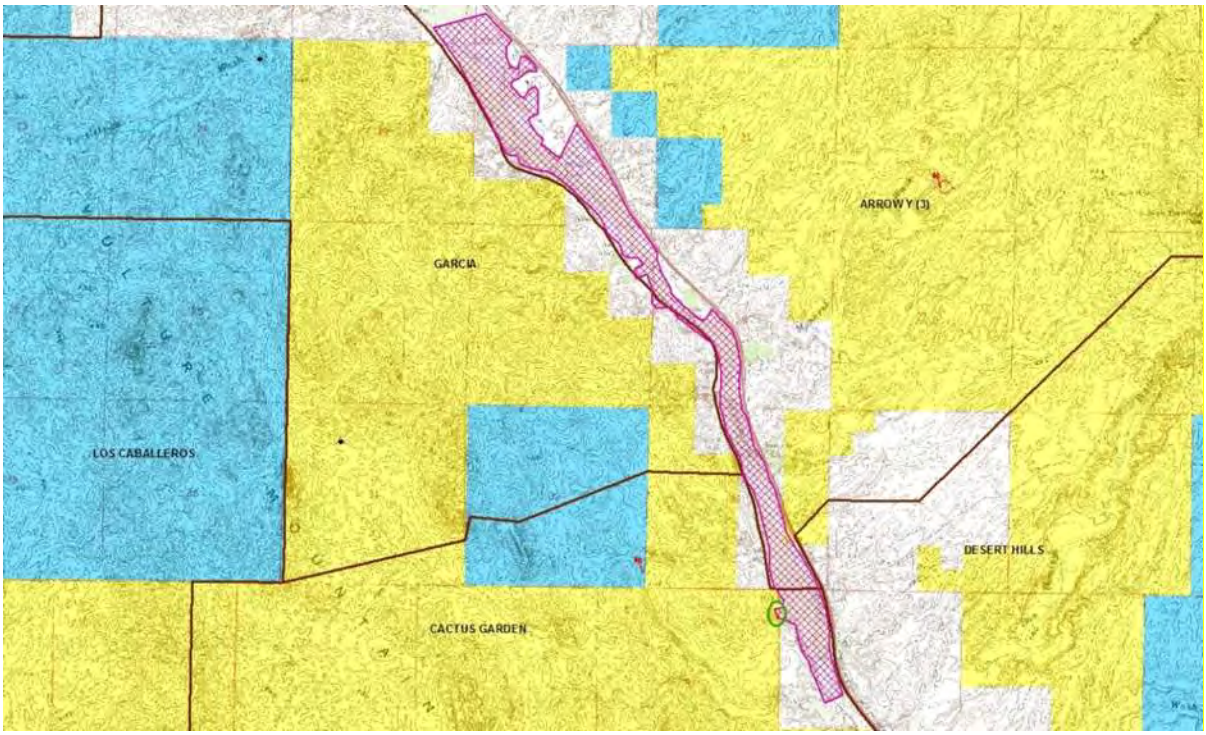

Figure 1. Critical habitat for southwestern willow flycatcher (pink cross-hatched polygon) adjacent to the Garcia and Cactus Garden allotments. The patch of critical habitat that occurs on the Complex is outlined by the green circle.

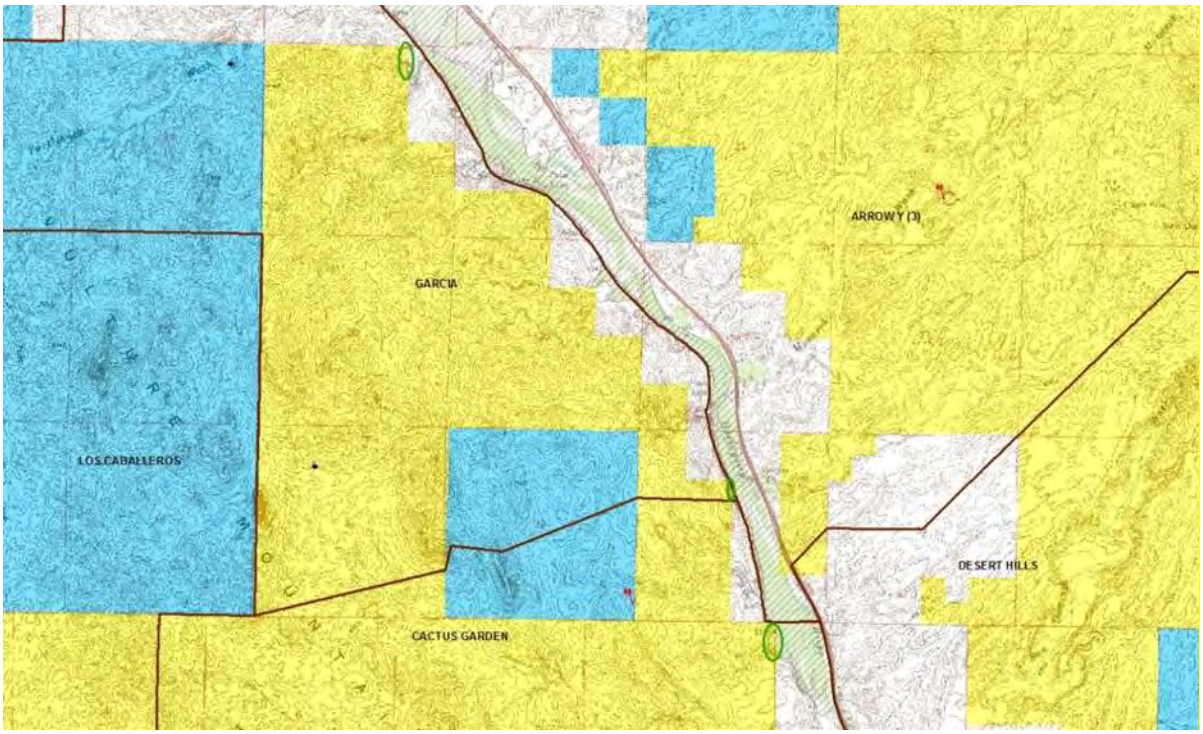

Figure 2. Proposed critical habitat for yellow-billed cuckoo (hatched polygon) adjacent to the Garcia and Cactus Garden allotments. The patches of proposed critical habitat that occur on the Complex are outlined by the green circles.

Figure 3. Small scale satellite map of southwestern willow flycatcher critical habitat (pink crosshatched polygon) and yellow-billed cuckoo proposed critical habitat (yellow hatched polygon) located in the Cactus Garden allotment.

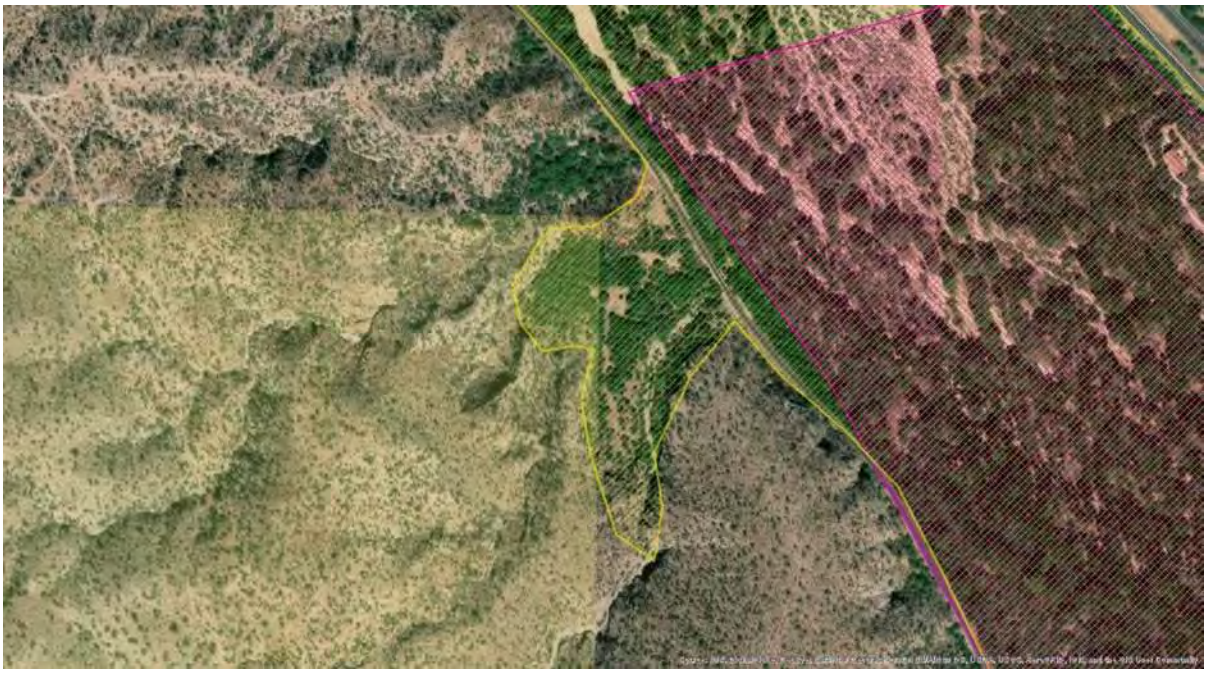
Figure 4. Small scale satellite map of the northern patch of yellow-billed cuckoo proposed critical habitat (yellow hatched polygon) that is located within the Garcia allotment (northeast portion of the allotment). BLM land is highlighted yellow. The railroad tracks can be seen near the center of the photo, running roughly north-south. The pink crosshatched polygon is southwestern willow flycatcher critical habitat.

Figure 5. Small scale satellite map of the southern patch of yellow-billed cuckoo proposed critical habitat (yellow hatched polygon) that is located within the Garcia Allotment.

BLM Sensitive Species

Sonoran desert tortoise, a BLM sensitive species, is known to occur on the Complex. Sonoran desert tortoises occupy much of the upland areas in the Complex. The desert tortoise distribution within the Complex is not uniform. Tortoises tend to occupy hillsides and ridges with outcrops of large boulders as well as areas with incised washes and caliche caves but may be found in lower densities throughout the area. Tortoises generally use natural and excavated cover sites between or under boulders and in caliche caves along washes wherever they occur. Their diet consists of annual forbs (30.1 percent), perennial forbs (18.3 percent), grasses (27.4 percent), woody plants (23.2 percent) and prickly pear fruit (1.1 percent) (Van Devender, et al. 2002). These forage species are available for Sonoran desert tortoise throughout the Complex.

The Complex contains Category II and Category III desert tortoise habitat. Category II habitat is defined as: 1) habitat that may be essential to the maintenance of viable populations; 2) habitat where most conflicts are resolvable; and 3) habitat that contains medium to high densities of tortoises or low densities contiguous with medium or high densities. Category III habitat is defined as: 1) Habitat that is not considered essential to the maintenance of viable populations; 2) habitat where most conflicts are not resolvable; and 3) habitat that contains low to medium densities of tortoises not contiguous with medium or high densities. The table below shows the approximate acreages of desert tortoise habitat within the Complex.

Table 11. Acreage of Sonoran desert tortoise habitat within the Complex

Allotment	Category II Acres	Category III Acres
Jones	16,624	0
Garcia	12,044	3,007
Los Caballeros	11,301	0
Cactus Garden	9,793	263

3.2.4 Environmental Consequences for Wildlife Resources

Proposed Action

Wildlife and Migratory Birds

Both cattle and wildlife utilize herbaceous vegetation. Various wildlife species (e.g., mule deer, some migratory birds) depend on forbs and shrubs for forage and concealment. Insectivore species such as bats or some migratory birds are indirectly dependent on herbaceous vegetation to support their insect population diet or to provide a substrate for nesting, roosting, or concealment. Larger predator species are indirectly dependent on herbaceous vegetation to provide forage and cover for prey species such as small mammals and birds. The presence and movement of livestock between areas can result in the direct disturbance or displacement of individual wildlife species from areas providing cover and forage. Competition between livestock and a variety of wildlife species can occur where livestock and wildlife are utilizing the same forage plants.

Presently Rangeland Health Standards for upland habitat are being met, and DPC objectives at most (13 out of 14) of the Key Areas are being met across the Complex. The Proposed Action is designed to improve conditions for upland vegetation near livestock water sources, major drainages and washes through allowing increase flexibility in livestock rotation and reducing soil erosion. This would maintain or improve upland vegetation productivity over current conditions in the vicinity of drainages and washes across the Complex, providing increased forage opportunities and cover for wildlife species in important desert wash habitat. This would be expected to benefit mule deer and a variety of migratory birds. This would also be expected to increase seed production in these areas for seed-eating species and residual forage for insects, providing important prey for bats, insectivorous migratory birds, and raptors.

The construction of the proposed range improvements would result in temporary disturbance to a variety of wildlife species that are present in the vicinity of the project. Wildlife would likely flee the area while construction is taking place but would be expected to return once construction has finished. The construction of the new water facility would result in the loss of approximately 0.25 acres of upland Sonoran Desert vegetation. This would be a negligible long-term adverse effect to wildlife in the vicinity of the new water. Since livestock waters provide a benefit to many wildlife species, the availability of water in the area will provide a long-term benefit to many wildlife species in the vicinity of the water. Overall, since all of the range improvements are designed to improve livestock distribution across the Complex, long-term positive benefits are expected through more effectively managing livestock utilization of vegetation.

Routine maintenance of water sources (tanks and troughs) in the Complex would continue to benefit wildlife species in this arid environment. Some wildlife species could be displaced when cattle are present at water sources but would be expected to return once livestock moved to other locations within the allotments.

Special Status Species

Federally Listed Species

BLM consulted with the US Fish and Wildlife Service (USFWS) on the effects of the Complex grazing permit renewal. The USFWS concurred with BLM that the Complex grazing permit renewal "may affect, but is not likely to adversely affect" the southwestern willow flycatcher and

its designated critical habitat, and the yellow-billed cuckoo and its proposed critical habitat. The analysis below summarizes the biological assessment that was prepared for consultation on the Complex grazing permit renewal.

Southwestern willow flycatcher and designated critical habitat

Effects to the Species

Livestock are excluded from the Hassayampa River and associated riparian habitat by pasture fencing and right-of-way fencing for the railroad tracks that are located between the River and the Complex of grazing allotments (Figures 1-5). There is one small (0.9 acre) patch of southwestern willow flycatcher critical habitat present on the Complex. This patch of critical habitat is located on the Cactus Garden Allotment upslope from the railroad embankment where a drainage feature intersects the railroad embankment. Increased soil moisture at this location supports a patch of vegetation that is denser than the surrounding upland habitat (Figure 3). This dense patch of vegetation consists primarily of mesquite shrubs and trees (*Prosopis* sp.). While mesquite thickets do not provide nesting habitat for southwestern willow flycatchers (USFWS 2002), it is possible that willow flycatchers may use this habitat for foraging. The presence of livestock could cause flycatchers to flush from the area, interrupting foraging. This impact would be temporary in nature, occurring only when livestock and flycatchers are present in this patch of habitat. Since the allotment contains such a small percentage of available foraging habitat in the area, birds could disperse to nearby habitat to forage, and potentially return once the livestock had left the area. Livestock trampling and herbivory could limit or reduce the density and extent of vegetation used as foraging habitat. However, the conservation measure of prohibiting supplement placement within two miles of proposed critical habitat would reduce the likelihood of concentrated livestock use in critical habitat and would reduce the likelihood that BLM actions would increase the occurrence of cowbird parasitism. Also, the nearest livestock water source on BLM land is located approximately two miles from southwestern willow flycatcher breeding habitat, so this water source would not contribute to concentration of livestock use in this patch of critical habitat and is unlikely to increase cowbird parasitism.

Effects to Critical Habitat

The primary constituent elements of southwestern willow flycatcher critical habitat are 1) riparian vegetation and 2) insect prey populations. The vegetation within the patch of critical habitat consists primarily of mesquite shrubs and trees. Mesquite is often a component of the riparian vegetative community, growing in the transition zone between riparian and upland habitat. Livestock trampling and herbivory in this patch of critical habitat could reduce the extent and density of vegetation in the patch, thus reducing foraging habitat and habitat availability for insects that could provide forage for willow flycatchers. The conservation measure of prohibiting supplement placement within two miles of critical habitat would reduce the likelihood of concentrated livestock use in this area. Also, the nearest livestock water source on BLM land is located approximately two miles from southwestern willow flycatcher critical habitat, so this water source would not contribute to concentration of livestock use in this patch of critical habitat. This patch of critical habitat is a very small portion of the Hassayampa critical habitat unit, comprising approximately 0.2 percent of the unit.

Yellow-billed cuckoo and proposed critical habitat

Effects to the Species

Yellow-billed cuckoos are known to occupy riparian habitat on private lands along the Hassayampa River, but livestock on the Complex are excluded from the Hassayampa River and associated riparian habitat by pasture fencing and the right-of-way fencing for the railroad tracks located west of the River (Figures 1 - 5). There are three small patches of yellow-billed cuckoo proposed critical habitat present on the Complex totaling 7.2 acres in size: a 3.1-acre patch on the Cactus Garden allotment, and two patches on the Garcia allotment (a 2.8-acre patch and a 1.3-acre patch). These patches of proposed critical habitat are located west of the railroad tracks where ephemeral drainages intersect the railroad embankment. Increased soil moisture at these locations support vegetation that is denser than the surrounding upland habitat (Figures 3 - 5). These dense patches of vegetation consist primarily of mesquite trees and shrubs (*Prosopis* sp.). Western yellow-billed cuckoos rarely nest at sites less than 50 acres in size, and sites less than 37 acres are considered unsuitable habitat (Laymon and Halterman 1989), so suitable nesting habitat is not present on the complex. However, yellow-billed cuckoos may use these patches of proposed critical habitat for foraging. The presence of livestock grazing could cause cuckoos to flush from the area, interrupting foraging. This impact would be temporary in nature, occurring only when livestock and cuckoos are both present in these patches of habitat. Since the allotment contains such a small percentage of available foraging habitat in the area, birds could disperse to nearby habitat to forage, and potentially return once the livestock had left the area. Livestock trampling and herbivory could limit or reduce the density and extent of vegetation used as foraging habitat. However, the conservation measure prohibiting supplement placement within two miles of proposed critical habitat would reduce the likelihood of concentrated livestock use in proposed critical habitat. Livestock water sources are not located near these patches of proposed critical habitat (located approximately two miles away from proposed critical habitat), so livestock waters do not contribute to concentration of livestock use in these patches of proposed critical habitat.

Effects to Proposed Critical Habitat

The primary constituent elements (PCEs) of yellow-billed cuckoo critical habitat are 1) riparian woodlands, 2) adequate prey base and 3) dynamic riverine processes. In the proposed rule for designating critical habitat, mesquite is included in the definition of riparian trees (USFWS 2014), so riparian woodlands could be affected by livestock grazing in these patches of proposed critical habitat. The density and extent of riparian woodlands in these patches could be limited or reduced through herbivory and trampling. Since vegetation in these patches provide habitat for insects, impacts to vegetation due to herbivory and trampling could limit or reduce prey availability for yellow-billed cuckoos in the patches of proposed critical habitat on the Complex. The proposed action would have no effect on dynamic riverine processes. The conservation measure prohibiting supplement placement within two miles of proposed critical habitat would reduce the likelihood of concentrated livestock use in this area. Also, livestock water sources on BLM land are not located near these patches of proposed critical habitat (located approximately two miles away from proposed critical habitat), so livestock waters would not contribute to concentration of livestock use in these patches of proposed critical habitat. These patches of proposed critical habitat are a very small portion of the AZ-6 Hassayampa River proposed critical habitat unit, comprising approximately 0.3 percent of the unit.

BLM Sensitive Species

Desired plant community objectives were set to provide adequate forage for Sonoran desert tortoise (Appendix B). Perennial grasses are an important year-round food source for desert tortoises (Oftedal 2002). Objectives for perennial grasses were achieved at 5 out of the 8 Key Areas in the Complex where perennial grass objective were set (Appendix B). Palatable browse objectives were achieved at all of the Key Areas in the Complex. For those Key Areas that were located within Category II and III Sonoran desert tortoise habitat, objectives for perennial grasses were met at all of the Key Areas where perennial grass objectives were set. The Proposed Action is designed to improve conditions for upland vegetation near livestock water sources, major drainages and washes, and Category II Sonoran desert tortoise habitat through restrictions on supplemental feeding. This would maintain or improve upland vegetation productivity in the vicinity of important habitat features across the Complex, providing increased forage opportunities and cover for desert tortoises in these areas.

One new livestock water source is proposed on the north pasture of the Garcia Allotment within Sonoran desert tortoise Category II habitat. This water is being developed to replace a water that will be displaced by the development of the R&PP lease area. Tortoise clearance surveys were conducted on November 15, and December 9, 2019 for the recreation facility developments. No tortoises, tortoise burrows, or tortoise sign were found within ¼ mile of the proposed water. Approximately 1/3 of the footprint of the R&PP lease area is located in an area that was previously disturbed by mining. Construction of the facilities would cause destruction of most vegetation within the approximately one-acre footprint of the facility itself that has not already been disturbed by mining. Increased grazing pressure and trampling is expected to occur within ¼ mile of the water. Installation of this new water facility would have localized adverse effects on Sonoran desert tortoise through loss of cover and forage plant availability.

No Action Alternative

Wildlife, Special Status Species and Migratory Birds

The No Action Alternative would not provide the additional benefits to key wildlife forage species expected under the Proposed Action. Rangeland Health Standards and DPC objectives would continue to be met at most Key Areas, but the improvements in upland vegetation condition and wildlife habitat expected in the Proposed Action would not be expected to occur in this alternative. Overall, livestock distribution would not be expected to change, because no new range improvements would be authorized. The conservation benefit for southwestern willow flycatcher and yellow-billed cuckoo through restricting supplement placement within two miles of designated and proposed critical habitat would not occur.

No Grazing Alternative

Wildlife, Special Status Species and Migratory Birds

In the absence of livestock grazing, competition for wildlife forage vegetation would be reduced, providing more forage for wildlife and insect populations. The absence of livestock grazing could result in cover canopy increasing over time, benefiting cover-dependent species. Water developments would not be maintained or could be turned off, reducing water availability for wildlife in the allotments over time. Livestock disturbance/displacement effects would not occur, benefiting nesting migratory birds and other wildlife individuals. With the absence of grazing year-round, these improvements in vegetative cover conditions would be expected to occur more

rapidly. The recruitment of herbaceous species cover would be expected to be greater under this alternative, further benefiting wildlife species. The small patches of designated and proposed critical habitat on the BLM portions of the allotment would not be grazed, resulting in increased foraging habitat for southwestern willow flycatchers and yellow-billed cuckoos.

3.2.5 Soil Resources

This section discloses the impacts of livestock grazing on soil resources within the Complex allotments.

The BLM develops RHEs to determine whether standards are being achieved on a grazing allotment and to determine if livestock grazing is a causal factor for not achieving, or failing to make significant progress toward achieving, land health standards. Land Health Standard 1 is specific to specific to soils and hydrology and is evaluated based on monitoring within the Complex allotments.

Soils of the Complex are typical of the 7-10 inch precipitation zone of the Sonoran Desert. The erosional context in the higher elevations and mountainous areas of the Complex is stable, with less stability on floodplains and fans. Potential for sheet and rill erosion is greater on alluvial floodplains and fans compared to rocky mountainous soils.

Soil mapping shows a wind erodibility of 0 to 134 tons per acre per year across the Complex, with lower erodibility scores in mountainous areas and soils armored by rock and cobbles. Wind erodibility scores assume areas devoid of vegetation, and actual erosion values on the Complex are lower than the mapped values due to vegetative cover.

Water erosion within the Complex occurs during intense summer thunderstorms. Soils have well drained conditions; however, intense rainfall can overwhelm soil infiltration capacity and create overland flow. Intense monsoon rainfall can produce overland flow in part due to dry soils forming crusts that resist percolation. Overland flow transports soil particles along erosion pathways from runoff surfaces to run-on areas, typically formed by vegetation patches or topographic breaks. Compaction and trailing from cattle can exacerbate erosion when trails align with water flow pathways when soils are wet. This effect is mostly localized around livestock water sources on the Complex.

Desert soils have known contributions from biological soil crusts, also called cryptogamic crusts, for soil biologic function. The particular ecological province of the Complex with a thermic climate is expected to favor cyanobacteria that have a flat appearance. A byproduct of crust presence is aggregation that binds soil particles. Using the RHE measures, the soil aggregate stability tests did not find aggregation substantially departed. Cryptogamic soil crusts were noted at Jones Key Areas 2, 3, 4, and 5, Garcia Key Area 3S, and Cactus Garden Key Area 1 and 3. Cryptogamic soil crusts are less common on mountainous areas of the complex.

Livestock grazing does affect soil productivity by removing a portion of the vegetative standing crop. Annually produced biomass serves both a physical and biological role. Plant litter physically works to insulate soils from evaporation and contributes as protective groundcover. Decomposition of litter provides substrate for soil microbes that increases available nutrients.

Soils on the Complex were found to meet Standard 1 in the RHE.

3.2.6 Environmental Consequences for Soil Resources

Proposed Action

Under the Proposed Action, soils are expected to maintain their integrity on the Complex. On the Jones, Los Caballeros, and Cactus Garden allotments, no additional impacts are expected. Areas of soil disturbance associated with livestock facilities or use areas would maintain their current appearance. Continued use by livestock would have a negligible effect on soil productivity and formation as no new livestock congregation areas would be created.

On the Garcia Allotment, installation of additional range facilities would have localized, slightly adverse, effects to soil resources. Installation of the fence along Aguila and Vulture Mine roads would create localized, slightly adverse, temporary effects from the installation of fence posts. Relocation of existing water sources would create localized adverse effects to soils by increasing livestock concentration in these areas. These effects are expected to be negligible. Installation of semi-porous rock dams are expected to have a localized, minor beneficial effect to soils. Captured sediments will reduce erosional effects, and increased moisture retention will benefit soil productivity.

On the Los Caballeros Allotment, reconstruction of existing water sources would have a negligible effect on soils. Soil disturbance in these areas is associated with the existing facility, and reconstruction would not affect the soil conditions outside the existing disturbance.

No Action Alternative

The No Action Alternative would not authorize construction of new range improvement projects and would continue livestock grazing at the currently authorized levels. Localized soil impacts from range improvement construction would not occur. Continuing present livestock management practices on the Complex would not result in impaired soil conditions given the findings of the RHE.

No Grazing Alternative

The removal of livestock from the Complex would increase the litter for soil processes and reduce compaction and bare soil exposure from livestock trampling. Impacts would be highest where groundcover slowly re-establishes at grazing congregation areas.

The impacts to vegetation and soils across the range would be slow and depend on the level of forage that livestock grazing previously impacted. Potentially, an increase in annual crop would boost substrate available for soil functional processes. However, the response from livestock removal would be low since rangeland forage makes up a small percentage of the annual crop. Changes would be highest where grasses and forbs thrive.

Using Milchunas (2006) review of plant community response to livestock grazing, the BLM would expect a very slow vegetation response to livestock removal in arid and semi-arid environments. In reviews of long-term studies on Chihuahua desert scrub with similar precipitation patterns to the Complex, findings indicate very little change in perennial grass cover after 16 to 25 years. Finally, the response from no grazing may be small since less change is associated with reductions

from moderate compared to heavy grazing levels. A seven-year study near Flagstaff found significant reductions in vegetation cover and plant community composition only in the heavily grazed treatment when compared to the moderate and no grazing treatments (Loeser et.al. 2007).

3.3 Residual Effects

Residual effects are effects to the environment that remain after the implementation of the alternatives and mitigation.

Proposed Action

Under the Proposed Action, no residual effects are expected on the Complex. The majority of the Complex would remain under management similar to existing systems, and design features incorporated into range improvements are expected to negate any potential residual effects.

No Action Alternative

Under the No Action Alternative, no residual effects are expected on the Complex. Livestock management will continue under the same terms and conditions as the prior authorizations, and no improvement construction will occur.

No Grazing Alternative

Under the No Grazing Alternative, maintenance on water sources within the Complex would cease. Water availability for wildlife would be reduced, changing wildlife use patterns within the Complex.

4.0 CUMULATIVE EFFECTS

A cumulative effect is defined under NEPA as "the change in the environment which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other action". "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Part 1508.7). Past, present, and reasonably foreseeable future actions are analyzed to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the Proposed Action and/or Alternatives may have an additive and significant relationship to those effects.

4.1 Geographic Scope

The geographic scope of the cumulative effects study area is the boundaries of the allotments within the Complex, comprising approximately 108,812 acres of public, private, and State trust lands (Map 1).

4.2 Timeframe of Effects

The timeframe evaluated for direct and indirect effects of livestock grazing and range improvements is 10-years, the lifespan of the grazing authorization.

4.3 Past and Present Actions

Livestock grazing has been present on the Complex since the 1800s and continues to this day. Early range improvements consisted of dirt stock tanks located along drainages and fencing of the allotment boundaries. Much of the allotment boundary fencing dates from the early to mid-1900s, and requires ongoing maintenance. Additional water sources in the form of wells were installed beginning in the 1940s. Most utilize windmills to pump water and require periodic maintenance. Dirt tanks located within the allotments require periodic clean outs to remove accumulated sediment.

4.4 Reasonably Foreseeable Future Actions

Under the No Action and Proposed Action alternatives, livestock grazing would continue to occur for a 10-year period under the renewed grazing authorizations. Maintenance would continue to occur as necessary on range improvements located within the Complex.

Under the Proposed Action, construction of the fence lines would require approval from the State Land Department and private landowners where the fence would be located on those lands.

Areas lying within the Vulture R&PP Lease are expected to be developed for recreational use and fenced to separate these lands from the grazing allotments.

No future actions are expected under the No Grazing Alternative.

4.5 Analysis by Resource

Only those resources directly or indirectly affected by the Proposed Action or No Action Alternative are considered for cumulative effects.

Vegetation Resources

Proposed Action
Under the Proposed Action, livestock grazing would continue at existing levels. Range improvements would facilitate improved livestock distribution and livestock rotation throughout the Complex, as well as increasing soil moisture availability. This would have a beneficial cumulative effect on vegetation resources through reduced utilization and increased vegetative growth potential.

No Action Alternative
Under the No Action Alternative, livestock grazing would continue at existing levels. Range improvements would not be constructed, and current vegetation trends would continue. This would have a negligible cumulative effect on vegetation resources.

No Grazing Alternative
Under the No Grazing Alternative, livestock grazing would not be authorized on the public lands within the Complex for a period of 10-years. Reduced utilization levels on vegetation would have a negligible cumulative effect on vegetation resources due to grazing continuing on State and private lands within the Complex.

Wildlife Resources
Proposed Action
Under the Proposed Action, livestock grazing would continue to be authorized at existing levels. Range improvements would increase water availability for livestock and wildlife use, a beneficial cumulative effect on wildlife species. Competition for forage between wildlife and livestock would continue; however, range improvements would facilitate improved livestock distribution and livestock rotation throughout the Complex, as well as increasing soil moisture availability. This would have a beneficial cumulative effect on wildlife forage through reduced utilization and increased vegetative growth potential.

No Action Alternative
Under the No Action Alternative, livestock grazing would continue at existing levels. Additional water sources would not be constructed, which could be utilized by wildlife in addition to cattle. Competition for forage between wildlife and livestock would continue, without the beneficial effects of the range improvements associated with the Proposed Action.

No Grazing Alternative
Under the No Grazing Alternative, livestock grazing would not be authorized on public lands within the Complex. In the absence of livestock grazing, competition for wildlife forage vegetation would be reduced, which would have a beneficial cumulative effect by providing more forage for wildlife and insect populations. The absence of livestock grazing could result in cover canopy increasing over time, a beneficial cumulative effect for cover-dependent species. Livestock disturbance/displacement effects would not occur, benefiting nesting migratory birds and other wildlife individuals. Water developments would not be maintained or could be turned off, reducing water availability for wildlife in the Complex over time.

Soil Resources
Proposed Action

Under the Proposed Action, livestock grazing would continue to be authorized at existing levels. Construction of range improvements on the Garcia Allotment would have negligible adverse cumulative effects on soil resources due to fence line trailing and compaction at water sources.

No Action Alternative
Under the No Action Alternative, livestock grazing would continue at existing levels. Range improvements would not be constructed on the Garcia Allotment. Livestock would continue to have a negligible adverse effect on soil resources on the Complex.

No Grazing Alternative
Under the No Grazing Alternative, livestock grazing would not be authorized on the public lands within the Complex. Removal of livestock from public lands would have a negligible beneficial effect on soils due to the reduced compaction of soils in livestock congregation areas.

5.0 PERSONS, GROUPS, AND AGENCIES CONSULTED

5.1 List of Preparers

The following individuals were involved in the preparation of this EA:

Bureau of Land Management

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Roger Joos	Wildlife Biologist	Wildlife Resources
Brian Buttazoni	Planning & Environmental Specialist	NEPA

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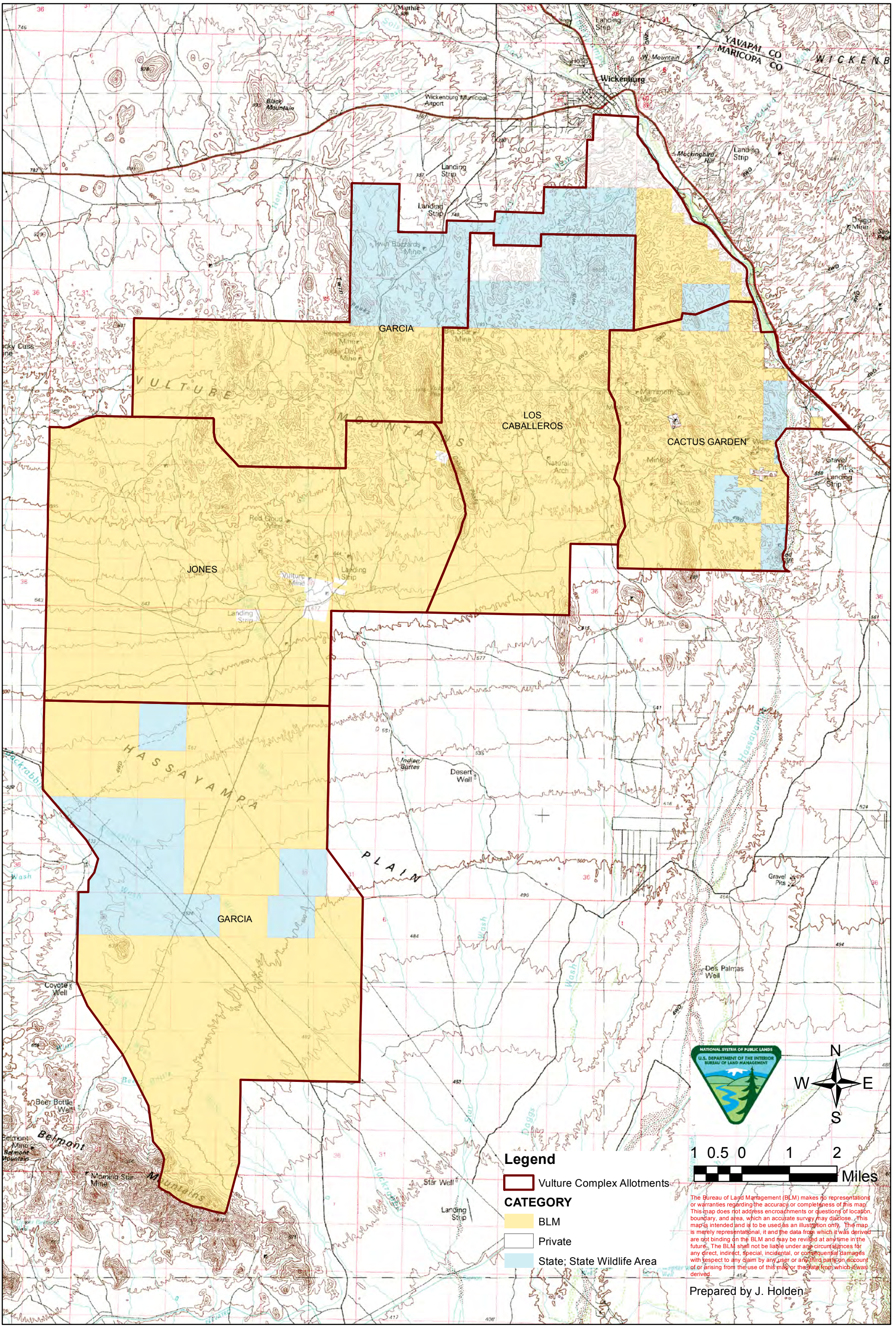
Vulture Complex Allotments



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