

Lower Centennial Complex Grazing Permit Renewal

ENVIRONMENTAL ASSESSMENT

DOI-BLM-AZ-P010-2018-0013-EA

U.S. Department of the Interior
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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 Clem (#3017), Bialac (#3008), Carter-Herrera (#3015), and Flat Iron (#3031) allotments. A Rangeland Health Evaluation (RHE) was prepared for these four allotments in 2018 (Appendix A).

The Lower Centennial Complex (Complex, Map 1) is located along Interstate 10, west of Phoenix with the town of Tonopah, Arizona roughly central to the Complex. Salome Highway bisects the Clem Allotment north of I-10. The Carter-Herrera Allotment surrounds Tonopah, Arizona, with the Bialac and Flat Iron allotments to the east. The eastern boundary of the Flat Iron Allotment is Wickenburg/Aguila Road. The Central Arizona Project (CAP) canal runs east/west through the Complex. The allotments analyzed in this document cover approximately 181,322 acres located in Maricopa and Yavapai counties. BLM administered lands account for approximately 84,439 acres. The remainder is Arizona State Trust land (27,225 acres), privately held lands (69,312 acres), and Bureau of Reclamation (BOR) managed lands (346 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

The Clem Allotment

The Clem Allotment contains three major pastures. The Clem pasture lies south of I-10 and west of approximately 480th Avenue. This pasture is managed by the Lower Sonoran Field Office and is not part of this EA. The Clem West pasture lies north of I-10 and west of Avenue 75E. The Clem East Pasture lies north of I-10, east of Avenue 75E, and west of Burnt Mountain. The East Clem pasture also includes a smaller pasture south of I-10 on the northern side of Saddle Mountain. The current permit holder for the Clem West pasture is Diamond and a Half Cattle Company. The current permit holder for the Clem East pasture is Timothy and Andrea Maxwell.

The Bialac Allotment

The current lease holder for the Bialac Allotment is Bruce Hunter. This Allotment is ephemeral, and does not have a base herd authorization. Livestock may be applied for on an annual basis, based on spring green-up from winter rains.

The Carter-Herrera Allotment

The current permit holder for the Carter-Herrera Allotment is Bruce Hunter. This Allotment is held under a base property lease. There is no formal rotation system in place on the Allotment.

The Flat Iron Allotment

The current permit holder for the Flat Iron Allotment is White Dog Ranch, LLC. There is no formal rotation system in place on the Allotment.

Table 1: Clem West Pasture Profile.

Permittee	Currently being transferred
Percent/Acres BLM Land	27% / 7,620
Percent/Acres State Land	25% / 7,286
Percent/Acres Private Land	48% / 13,685
Grazing Preference	780
Season of Use	Yearlong
Number and class of livestock use	65 Cattle

Table 2: Clem East Pasture Profile.

Permittee	Timothy and Andrea Maxwell
Percent/Acres BLM Land	56% / 38,583
Percent/Acres State Land	21% / 14,913
Percent/Acres Private Land	22% / 15,561
Grazing Preference	1118
Season of Use	Yearlong
Number and class of livestock use	137 Cattle

Table 3: Bialac Allotment Profile.

Permittee	Bruce Hunter
Percent/Acres BLM Land	47% / 10,321
Percent/Acres State Land	0
Percent/Acres Private Land	53% / 11,842
Grazing Preference	0
Season of Use	Ephemeral
Number and class of livestock use	N/A

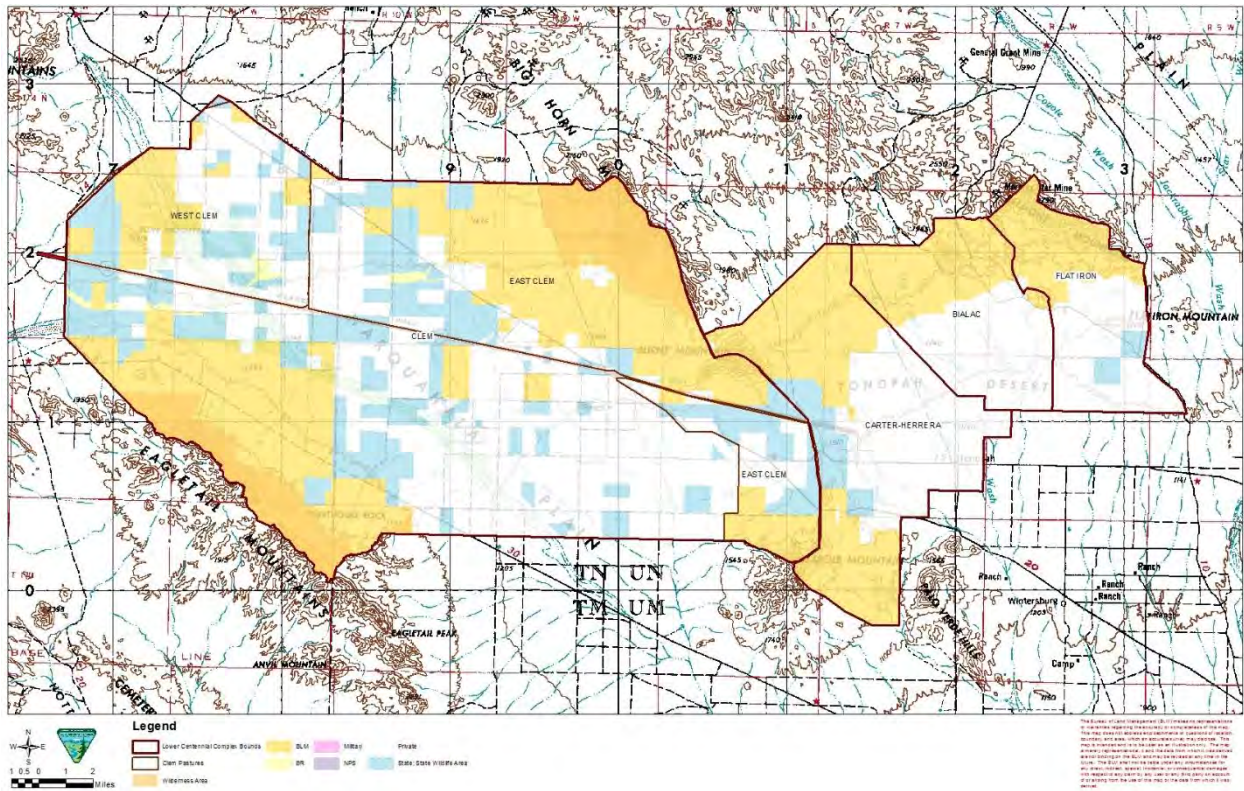
Table 4: Carter-Herrera Allotment Profile.

Permittee	Bruce Hunter
Percent/Acres BLM Land	48% / 20,046
Percent/Acres State Land	9% / 3,788
Percent/Acres Private Land	43% / 17,851
Grazing Preference	512
Season of Use	Yearlong
Number and class of livestock use	52 Cattle

Table 5: Flat Iron Allotment Profile.

Permittee	White Dog Ranch, LLC
Percent/Acres BLM Land	41% / 7,869
Percent/Acres State Land	6% / 1,234
Percent/Acres Private Land	53% / 10,373
Grazing Preference	392
Season of Use	Active
Number and class of livestock use	38 Cattle

Map 1: Allotments within the Lower Centennial Complex



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 A). The Land Health Standards and Guidelines for Grazing Administration were also incorporated into the RMP. The Land Health Standards for Rangeland 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 on February 16, 2018. 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, 2018. Comments were received from the Desert Tortoise Council on the Complex. 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.”

Travel Management (TM)

Motorized and Mechanized Travel and Public Access (TM)

TM-8 “All motorized and mechanized travel is limited to existing roads and trails, according to the BLM inventory of routes, until final route designations are made. Where inventories are not complete, use is limited to existing routes. Inventoried routes may be

updated with new information from BLM, citizens, or partners. Livestock and game trails are not considered existing routes or trails.”

TM-9 “Cross-country travel is prohibited away from existing, inventoried routes. This prohibition will continue after routes are formally designated. The following exceptions apply in both cases:

- Public health, safety, and law enforcement emergencies;
- Administrative uses; or
- BLM-authorized tasks approved by the authorized officer.”

TM-13 “Motorized vehicles may not be used off designated routes to retrieve game. The cross-country use of wheeled game carriers is permitted, except in wilderness areas. Permittees, including livestock operators, may not use motorized vehicles off designated routes without express permission from the Authorized Officer.”

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 Lower Centennial 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 for the Complex allotments to ensure management objectives and Rangeland Health Standards continue to be achieved or make progress towards achievement.

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 A), 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 West Clem, East Clem, Carter-Herrera, Bialac, and Flat Iron grazing authorizations for a period of 10-years with the following terms and conditions (Table 6). 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 6: Proposed Mandatory Terms and Conditions.

Allotment	Pasture	Livestock Number	Grazing Period	Percent Public Land	Animal Unit Months
West Clem	N/A	109	3/1-2/28	60	780
East Clem	N/A	179	3/1-2/28	52	1118
Carter-Herrera	N/A	43	3/1-2/28	100	512
Bialac	N/A	0	Ephemeral	100	0
Flat Iron	N/A	33	3/1-2/28	100	392

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 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 Category 2 habitat: hillsides and ridges with outcrops of large rocks and boulders as well as areas with incised washes and caliche caves.

2. Flood Control structures and the associated “greenline” adjacent to the Central Arizona Project (CAP) canal are excluded from grazing use where fenced.
3. 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)).
4. 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.

Range Improvements

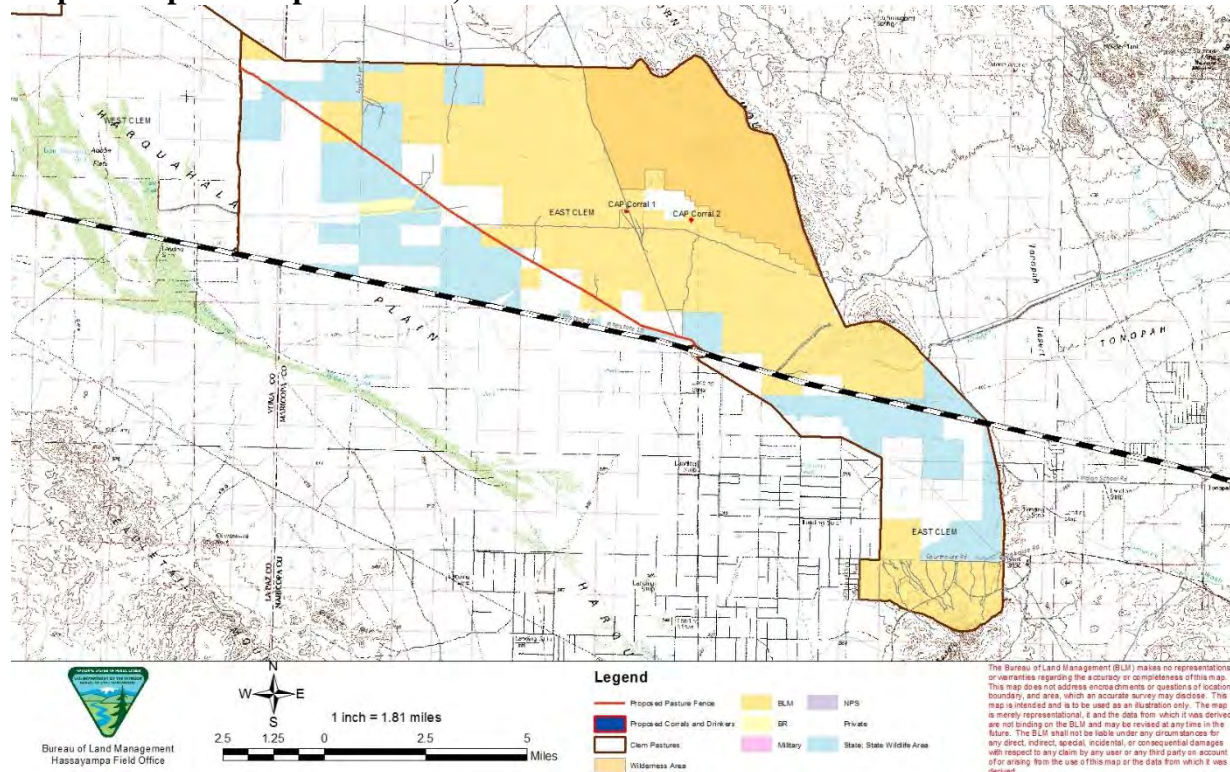
To facilitate orderly management of the range, new fencing and water sources are proposed to be located on the Clem East Pasture. Fencing is proposed along Salome Highway to split the larger pasture and to reduce livestock collisions along the currently unfenced highway right of way.

Fencing along Salome Highway would be approximately 13.25 miles, with approximately 3 miles of fence on public lands and 10.25 miles on state and privately held lands. The fencing would conform to BLM and State fencing standards, consisting of 4 wires with the lowest wire being barbless strand a minimum of 18” above ground.

Two additional livestock water facilities are to be located on the south side of the CAP canal on the eastern side of the Clem East pasture. With approval from CAP, these facilities will draw water from the canal to fill 10,000 gallon storage tanks and livestock drinkers. One 10,000 gallon tank and 2, 500-gallon drinkers would be installed at each site. Each facility will include a new corral structure the water facilities will be located within. The corrals would be approximately 200 by 200 feet, for a total square footage not to exceed 40,000 square feet per corral. The total area of each corral is expected to be approximately 0.9 acres. This accounts for 0.005% of the public lands within the allotment.

The proposed improvements are shown on Map 2, below.

Map 2: Proposed Improvements, Clem Allotment East Pasture



Administrative Actions

Under the Proposed Action, the BLM intends to divide the Clem Allotment into three separate grazing allotments. The Allotment is currently run as a community allotment with three authorizations separated by interior pasture fencing, and is managed by two separate field offices. The Clem will be divided into the Clem Allotment, currently the Clem Pasture described above, the West Clem, currently the Clem West Pasture, and the East Clem, currently the Clem East Pasture. The Clem pasture will retain the original allotment numbering. West and East Clem will be assigned new allotment numbers. This is expected to simplify administrative management of the allotments.

The CAP canal right-of-way includes several areas where the Flood Control District of Maricopa County (FCDMC) and the BOR have built flood control structures to safeguard the integrity of the canal system due to overland flow. These structures mainly consist of steep levees that direct floodwaters from the canal. Due to the steep, uncompacted nature of these levees, livestock use can potentially increase erosion on the banks of these structures. CAP, BOR, and FCDMC have requested that livestock use be limited or removed from these areas, which are currently or are planned to be fenced. BLM intends to add this restriction to the grazing authorizations. Fence construction is an action taken by CAP and BOR under their right of way authorizations to comply with their policies of livestock exclusion, and is outside the scope of this analysis.

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 Clem West Pasture, Clem East Pasture, Carter-Herrera, Bialac, and Flat Iron 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 Clem West Pasture, Clem East Pasture, Carter-Herrera, Bialac, and Flat Iron 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, and several of the allotments have not been stocked for several years. It was not possible to calculate a reduced grazing alternative based on a desired stocking rate analysis.

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.

Tortoise Habitat Use Restriction Alternative

The IDT reviewed a use restriction alternative where areas of tortoise habitat were limited to use during the tortoise “inactive” season. This alternative was deemed unfeasible for implementation. Approximately 37 miles of fencing would be required to segregate tortoise habitat from the remainder of the grazing allotments to control livestock access. The economic cost of implementing this fencing project would significantly outweigh the potential benefits to tortoise habitat. Due to implementation limits, 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 west of Phoenix, Arizona, with the town of Tonopah, Arizona located centrally in the Complex. The majority of public lands lies to the north of Interstate 10, with a pasture of the Clem East Pasture and a pasture of the Carter-Herrera lying south of the interstate. Access to the Clem West Pasture and Clem East Pasture is primarily from I-10 and Salome Highway. Access to the Carter-Herrera and Bialac allotments is primarily through surface roads in Tonopah. Access to the Flat Iron Allotment is primarily off of Wickenburg Road, north of the CAP canal.

The Complex comprises approximately 181,000 acres of mixed ownership land located primarily in Maricopa County, with areas of the Clem West Pasture in La Paz County. Approximately 84,500 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
Clem East Pasture	1N	8W	Sections 1, 2, 3 and Portions of 4, 10, 11, 12
	2N	8W	Sections 6, 7, 9, 10, 34 and Portions of 3, 4, 5, 8
	3N	8W	Section 31 and Portions of 7, 18, 19, 29, 30, 32
	3N	9W	Section 4-11, 13-21, 24-29, 34, 35, 36 and Portions of 2, 3, 22, 23, 30, 31, 32, 33
	3N	10W	Sections 1, 3, 8, 10-14 and Portions of 4, 24, 25
	4N	11W	Portions of Section 36
Clem West Pasture	3N	11W	Section 2,7
	3N	12W	Section 1, 2, 11, 12, 14, 16 and Portions of 3, 13, 23
	4N	11W	Portions of Section 21, 30, 32
	4N	12W	Section 36 and Portions of 34, 35
Carter-Herrera	1N	7W	Sections 7, 8, 9, 16, 17, 21 and Portions of 4, 5, 6, 19, 20
	1N	8W	Portions of Sections 12, 13
	2N	7W	Sections 6, 7 and Portions of 17, 31
	2N	8W	Sections 1, 2, and Portions of 3, 4, 5
	3N	7W	Sections 18, 19, 30, 31 and Portions of 20, 28, 29, 32, 33
	3N	8W	Sections 24, 25, 26, 34, 35, 36 and Portions of 18, 23, 27, 32, 33
Bialac	3N	6W	Portions of Sections 7, 18, 19
	3N	7W	Sections 11-17, 21, 22, 23 and Portions of 1, 2, 20, 24, 26, 27, 28, 29
Flat Iron	3N	6W	Section 8, 9, 15, 16, 17 and Portions of 3, 4, 5, 6, 7, 10, 11, 13, 14, 20, 21, 22, 23, 24
	4N	6W	Portions of Section 32

The terrain of the Complex varies from alluvial plains to moderately steep and steep mountain grades. Elevations on the Clem Allotment range from 2,500 feet in the Big Horn Mountains, to 1,200 feet on the Harquahala Plain. Elevations on the Carter-Herrera Allotment range from 2,800 feet at Saddle Mountain, to 1,200-1,300 feet across most of the allotment. Elevations on the Bialac and Flat Iron Allotments fall between 1,200-1,300 feet on alluvial plains, up to 2,400 feet in the Belmont Mountains.

Climate within the Complex is typical of the 3-7 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 would continue to contribute negligible amounts of methane. Additional analysis is not warranted.
Areas of Critical Environmental Concern	N	N/A	Resource Not Present.
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.
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.
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.
Migratory Birds	Y	Y	Carried Forward for Analysis. See Section 3.2.3.
Native American Religious Concerns	N	N/A	Resource Not Present.
Threatened or Endangered Species	N	N/A	Resource Not Present.
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/WSA	Y	N	Portions of the Clem East Pasture lie within the Bighorn Wilderness. Under all alternatives, no changes to wilderness management will occur. Proposed range improvements are outside of wilderness areas and would not affect livestock use patterns within wilderness due to their locations.

*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.
Fire Management	Y	N	Under the Proposed Action, the continuation of livestock grazing in the allotments would have no impact on fire suppression activities.
Forest Resources	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 right-of-ways 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.
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 allotments, under the Proposed Action the continuation of livestock grazing and new range improvements would have no effect on these activities.
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 leasee, and the negligible contribution to economic input in the county.
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.
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.
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 3-7 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. The dominant plant species on these areas include creosote (*Larrea tridentata*), bursage species (*Ambrosia* sp.), ratany (*Krameria* sp.), and palo verde (*Parkinsonia* sp.). Grasses, while limited on the lower elevations, are typically big galleta (*Pleuraphis* sp.) and three-awn species (*Aristida* sp.).

The mountainous areas of the Clem and Carter-Herrera allotments have a generally shrubby aspect, with dominant shrub and tree species being palo verde, bursage species, brittlebush (*Encelia* sp.), and ratany as shown in the monitoring data for Bialac Key Area 2 and Flat Iron Key Area 1. Grasses are generally limited due to the rainfall regime, and primarily consist of *Aristida* and

fluffgrass (*Dasyochloa pulchella*). At lower elevations and on toeslopes, creosote and cholla (*Cylindropuntia* sp.) are also present, as shown in the monitoring data for Carter-Herrera Key Area 2 and 3.

Key Areas were established in 2016 and 2017 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 ten Key Areas have been established 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 (*Gopherus morafkai*) 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 2 on the Carter-Herrera Allotment. All DPC objectives were met at Clem East Pasture Key Area 3 and Carter-Herrera Key Area 3. Vegetative cover objectives were not met at Clem East Pasture Key Area 1 and 2, Clem West Pasture Key Area 1, and Carter-Herrera Key Area 2. Perennial grass objectives, when used, were not achieved on Clem East Pasture Key Area 4. Browse composition objectives were not met at Clem East Pasture Key Area 2, Bialac Key Area 1 and 2, and Flat Iron Key Area 1. Bare ground cover class objectives were not met at Carter-Herrera Key Area 2.

Current utilization measurements on the Complex indicate low levels of use on the Clem pastures and the Carter-Herrera Allotment. The Bialac and Flat Iron allotments have not been stocked with livestock for several years and no utilization was observed. 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, with a negligible potential for improvements to vegetative species composition on the Clem East Pasture based on improved livestock distribution with new water sources. Livestock would continue to produce a negligible adverse effect on the vegetation on the Carter-Herrera Allotment. Stocking of the Bialac Allotment with an ephemeral turn-out would result in a negligible effect on vegetation, due to the primary forage species being short-lived annuals. Stocking of the Flat Iron Allotment would cause a slightly adverse effect on vegetation, however, as this allotment gets the most rainfall of the Complex, it has the greatest potential for vegetation recruitment.

Installation of two new water facilities on the Clem East Pasture would have localized adverse effects on the vegetation community. Construction of the corrals would cause destruction of most

vegetation within the footprint of the facility itself, comprising approximately 2 acres total for all facilities, and accounting for approximately 0.005% of the public lands. Improved livestock distribution in this area of the allotment would reduce grazing pressure around other perennial water sources, allowing for increased vegetative production and recruitment. This is expected to have a slightly beneficial effect on vegetation within the Allotment, and would reduce grazing pressure on areas not meeting DPC objectives.

Elimination of grazing access to the fenced green line areas adjacent to the CAP canal would allow for increased vegetation recruitment in these areas of greater moisture retention, as well as establishing a well-developed seed bank in these areas. This is expected to have a beneficial effect on vegetation within 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, limiting livestock rotation on the Clem East Pasture by water availability in existing dirt tanks and at existing wells. Livestock would not be excluded from the fenced green up areas adjacent to the CAP canal.

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. This would be expected to be most evident on the Clem and Carter-Herrera Allotments, which are currently stocking cattle. 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 allotments. 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. Desert bighorn sheep (*Ovis canadensis nelsoni*), occupy steep, rugged habitat in the Big Horn and Belmont Mountains as well as Saddle Mountain.

The Complex is located in the Arizona Game and Fish Department management units 41, 42 and 44A. Mule deer, desert bighorn sheep, and javelina are three 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 5 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 fasciculatum*), white bursage (*Ambrosia dumosa*), catclaw acacia (*Acacia greggii*), sweetbush bebbia (*Bebbia juncea*), 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.). Desert bighorn sheep utilize a wide variety of forage plants including barrel cactus, big galleta (*Pleuraphis rigida*), brittlebush (*Encelia farinosa*), catclaw acacia, fishhook cactus (*Mammillaria* sp.), ironwood, palo verde, white bursage, ratany, three-awn (*Aristida* sp.), white bursage, wolfberry, and ocotillo (Gedir et al. 2016).

Migratory Birds

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. 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. Sonoran desert tortoise (*Gopherus morafkai*), 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 10. Acreage of Sonoran desert tortoise habitat within the Complex

Allotment	Category II Acres	Category III Acres
Clem	11,631	5,640
Carter-Herrera	8,030	3,171
Bialac	5,838	3,384
Flat Iron	9,348	2,769

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 (9 out of 10) 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.

Routine maintenance of water sources (tanks and troughs) on the allotments 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. Proposed range improvements would increase water availability for both livestock and wildlife use, a beneficial effect for wildlife species.

Special Status 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 (Ofstedal 2002). Objectives for perennial grasses were achieved at 5 out of the 7 Key Areas in the Complex where perennial grass objective were set (Appendix B). Palatable browse objectives were achieved at 6 of the 10 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, and palatable browse objectives were achieved at 4 of the 7 Key Areas. At the Key Areas where tortoise forage objectives were not met, it is unlikely that current livestock grazing is the causal factor because livestock utilization was none to slight at these Key Areas (Appendix B). 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.

Two new livestock water sources are proposed on the Clem East allotment within Sonoran desert tortoise Category III habitat. Installation of these two new water facilities on the Clem East Pasture would have localized adverse effects on Sonoran desert tortoise forage plant availability. Construction of the facilities would cause destruction of most vegetation within the footprint of the facility itself. Improved livestock distribution in the allotment would reduce grazing pressure in the Bighorn Wilderness Sonoran desert tortoise Category II habitat, allowing for increased vegetative production and recruitment in this area. This is expected to have a beneficial effect on desert tortoise forage in Category 2 habitat.

Elimination of grazing access to the fenced green line areas adjacent to the CAP canal would allow for increased vegetation recruitment in these areas of greater moisture retention, as well as establishing a well-developed seed bank in these areas. This is expected to have a beneficial effect on Sonoran desert tortoises due to increased forage plant availability and cover.

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.

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.

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 3-7 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 136 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 all Clem East Pasture Key Areas, Carter-Herrera Key Area 2, all Bialac Allotment Key Areas,

and Flat Iron Allotment Key Area 1. Soil crusts were absent at Clem West Pasture Key Area 1 and Carter-Herrera Key Area 3.

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 Rangeland Health Evaluation.

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 Clem West Pasture, Carter-Herrera, Bialac, and Flat Iron 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 Clem West Pasture, installation of additional range facilities would have localized, slightly adverse, effects to soil resources. Installation of the fence along Salome Highway would create localized, slightly adverse, temporary effects from the installation of fence posts. Installation of the additional water sources would create localized adverse effects to soils by increasing livestock concentration in these areas. The improved livestock distribution facilitated by these water sources would provide a net beneficial effect to soil resources by more evenly distributing grazing utilization across the allotment.

Elimination of grazing from the green-up areas and flood control structures north of the CAP canal would have no effect on soil resources. These berms are artificial in nature and are undeveloped as soils. While livestock use could cause increased erosion of these unnaturally steep structures, the increased sedimentary load would be captured by the CAP canal levee and would not affect other soil resources within the Complex.

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 Michunas (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 181,322 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 fencelines would require approval from the State Land Department and private land owners where the fence would be located on those lands.

Under the Proposed Action, use of CAP water for the proposed storage tanks and corrals would require approval from CAP.

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 Clem East Pasture 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 Clem East Pasture. Livestock would continue to have a negligible 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

Name	Title	Project Expertise
James Holden	Rangeland Management Specialist	Livestock Grazing, Vegetation and Soil Resources
Codey Carter	Wildlife Biologist	Wildlife Resources
Brian Buttazoni	Planning & Environmental Specialist	NEPA

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