United States Department of the Interior
Bureau of Land Management
Lower Sonoran Field Office

Final Land Health Evaluation

Gable Complex

A Lazy T (#03002)
Dendora Valley (#03024)
Gable-Ming (#03032)
Jagow-Kreager (#03044)
Layton (#03049)
Ward (#03086)

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Abstract
This Rangeland Health Evaluation is a stand-alone report designed to ascertain compliance with the Arizona Standards for Rangeland Health on the A Lazy T, Dendora Valley, Gable-Ming, Jagow-Kreager, Layton, and Ward allotments (Complex). Standard 1 is achieved on all ecological sites with the exception of the Loamy Swales of the A Lazy T Allotment within the Complex. Standard 2 is not applicable to this complex of allotments. Standard 3 is achieved on all ecological sites with the exception of the Loamy Swales in the Ward Allotment and Limy Uplands Deep in the Gable-Ming Allotment within the complex.

1.0 Introduction:
The purpose of this land health evaluation is to gauge whether the Arizona Standards of Rangeland Health (Standards) are being achieved on the Complex and to determine if livestock are the causal factor for either not achieving or not making significant progress towards achieving land health standards. This evaluation is not a decision document, but a standalone report that records the analysis and interpretation of the available inventory and monitoring data. As part of the land health assessment process Desired Plant Community (DPC) objectives were established for the Biological Resources (biological objects within the boundaries of the allotments). The DPC objectives will assure that soil condition and ecosystem function described in Standards 1, 2 and 3 are met.

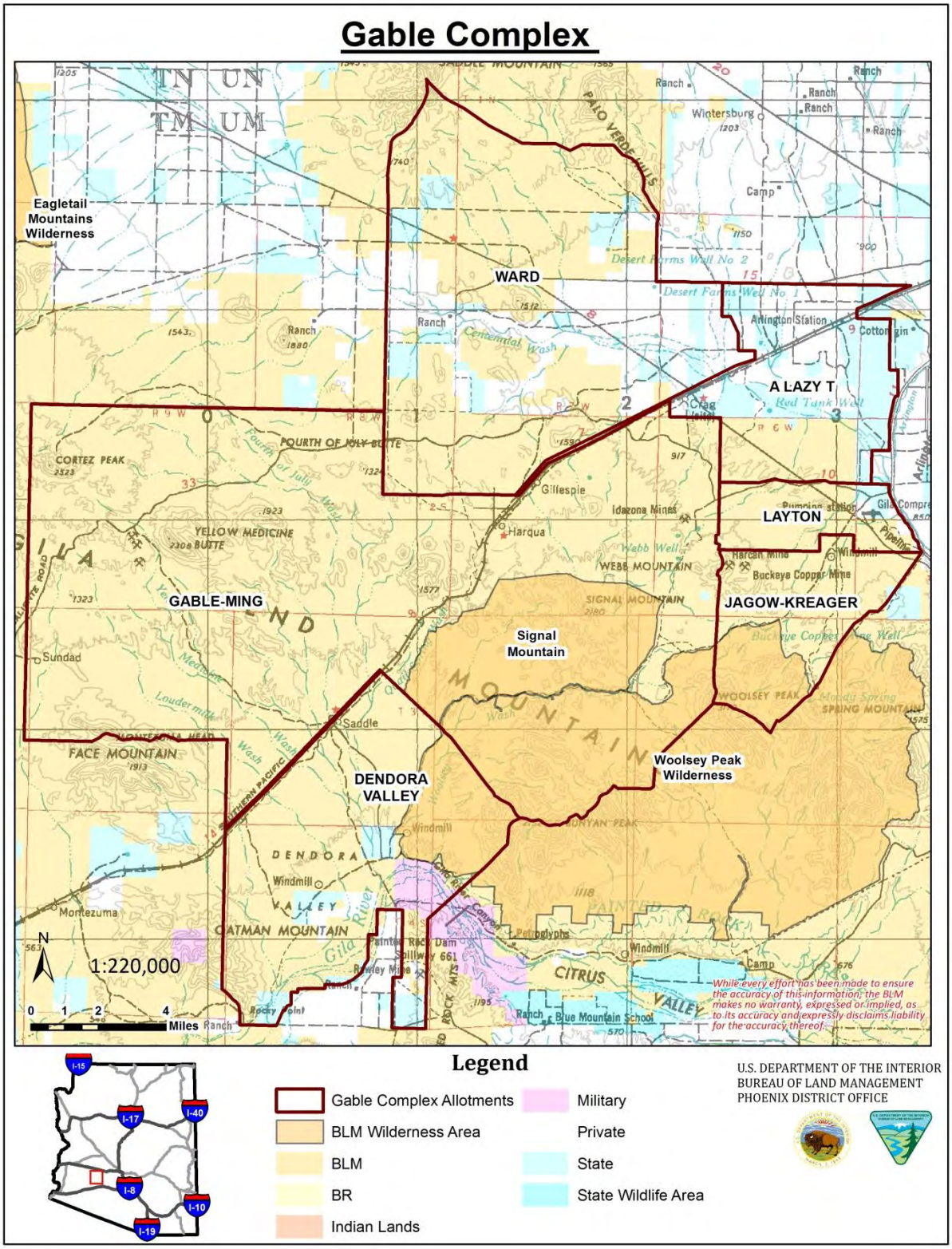
The Secretary of the Interior approved Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration (Guidelines) in April 1997. The Decision Record, signed by the BLM State Director (April 1997) provides for full implementation of the Standards and Guides in Arizona BLM Land Use Plans. See Appendix B for Arizona's Standards for Rangeland Health.

Land Health Standards are measurable and attainable goals for the desired condition of the biological resources and physical components/characteristics of the desert ecosystems found within the boundaries of these grazing allotments. This evaluation seeks to determine: 1) if standards are being achieved or not achieved, and, in cases where standards are not achieved, that significant progress is being made towards achievement of land health; and 2) where it is determined that land health standards are not being achieved, identify whether livestock grazing is a significant factor causing that non-achievement.

2.0 Complex Profile

2.1 Complex Location
The Complex is located 20 miles northwest of Gila Bend, Arizona (Map 1). The Complex is contained by Interstate 10 to the north, Interstate 8 to the south, and State Highway 85 to the west. The Complex is also roughly bisected by Agua Caliente Road, which runs west/southwest between Arlington and Hyder, Arizona. Acreages for the allotments within the Complex are given below, in section 2.2.

Map 1: Gable Complex Allotments and Land Status



2.2 Physical Description

2.2.1Allotment Acreages

The acreages of the allotments within the Complex are listed in Table 1 below.

Table 1: Allotment Acreages

Land Classification	A Lazy T	Dendora Valley	Gable-Ming	Jagow-Kreager	Layton	Ward	Complex Totals
BLM Acres	5,072	29,360	124,529	13,044	5,894	34,758	212,657
State Acres	7,653	1,967	40	53	496	5,354	15,563
Other Federal Acres	0	1,463	0	0	0	0	1,463
Private Land Acres	6,301	1,028	24	0	401	14,771	22,525
Total Acres	19,026	33,818	124,593	13,097	6,791	54,883	252,208

2.2.2 Climate Data

Climate data for this Complex are taken from the Western Regional Climate Center data available at www.wrcc.dri.edu. The data are based on the National Oceanic and Atmospheric Administration (NOAA) site located in Gila Bend, Arizona southeast of the complex. Average mean air temperature at this site is 73.3°F, with an average daily maximum temperature of 89.4°F and an average daily minimum temperature of 56.2°F. This is consistent with the Natural Resource Conservation Service (NRCS) Agricultural Handbook 296, which describes the climate of the area as: average annual temperature-64°F to 71.6°F. Average freeze-free period-250 to 300 days (USDA 2006)

2.2.3 Precipitation

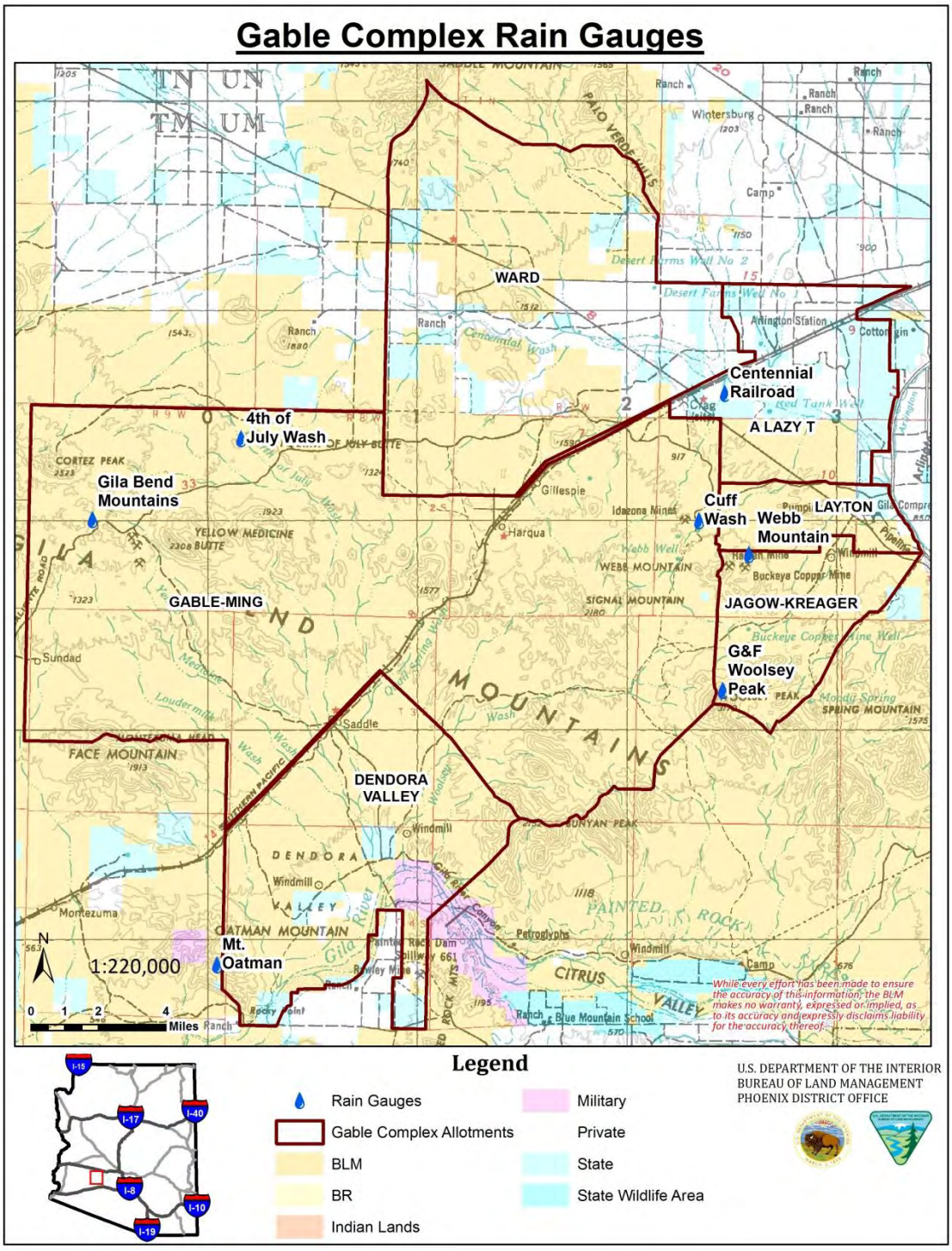
The Complex exhibits a bi-modal precipitation seasonality that is characteristic of southern Arizona. During winter and spring, frontal storm systems move west-to-east guided by the jet stream. Summer monsoon thunderstorms also deliver significant amounts of precipitation to the area. The Complex, as well as the majority of southern Arizona, exhibits strong year-to-year variations in precipitation due to El Nino-Southern oscillations, wet periods followed by dry periods. Local precipitation data was obtained from the Maricopa County Flood Control District. Seven rain gauges are dispersed throughout the complex (Table 2 and Map 2). These gauges have been in operation from eleven to thirty years, depending on location, and their elevations range from 850 feet to 1,740 feet. The mean precipitation from all seven locations is 6.32 inches annually with a maximum of 7.01 inches over a 12 year period at Webb Mountain (#5095) and a minimum of 5.47 inches over a 26 year period at the Gila Bend Mountains (#5050). For the purposes of this evaluation, all ecological sites are considered to be within the 3 to 7 inch precipitation zone (p.z.).

Table 2: MCFCD Rain Gauge Information

Station Name	Station Number	Elevation	Latitude	Longitude	Years of Record	Mean Annual Rainfall
G&F Woolsey Peak	5060	1,985	33.1733	112.8809	11	6.36
Cuff Wash	5075	970	33.2461	112.8946	12	6.91

Gila Bend Mountains	5050	1,560	33.2414	113.2050	26	5.47
Centennial Railroad	5100	850	33.3010	112.8827	24	5.71
Mt. Oatman	5000	1,740	33.05125	113.1367	30	6.12
4th of July Wash	5040	1,120	33.2776	113.12975	12	6.72
Webb Mountain	5095	1,035	33.2320	112.8689	12	7.01

Map 2: Gable Complex Rain Gauges



2.2.4 Soils Data

The soils of the Complex were determined using two soil maps produced by NRCS: the 1997 Soil Survey of Gila Bend-Ajo Area, Arizona, Parts of Maricopa and Pima Counties and the 1977 Soil

Survey of Maricopa County, Arizona. Field truthing was used in conjunction with the NRCS soil surveys to confirm the soils of the complex. Descriptions and quantifications of soil features and systematics can be found in the 1993 Soil Conservation Service Soil Survey Manual (Soil Survey Division Staff 1993).

Soils of the Complex have a hyperthermic soil temperature regime and a typic aridic soil moisture regime and are often described as complexes due to the intimate intermingling of soil types. Many of the soils in this area are formed in alluvium and derived from mixed rocks with a strong lime component. Each soil is described as a "map unit" in the NRCS soil surveys. The following soils/map units make up 97% of the complex and correspond with specific ecological sites.

Soil:
Hyder-Gachado-Gunsight extremely gravelly sandy loams, 1-25% slope

This map unit is on hills and fan terraces. This unit is about 35% Hyder soil, 29% Gachado soil, and 15% Gunsight soil. Hyder and Gachado soils are on nearly level to moderately steep hills, and the Gunsight soil is on the nearly level and gently sloping summits and sides of fan terraces. Cherioni and Vaiva soils, rock outcrop, Chuckawalla soils, and Carrizo soils make up the other 21% of the map unit.

The Hyder and Gachado portion of this mapping unit are shallow well drained soils with very gravelly surfaces and are derived from volcanic rock. The Hyder soil has an extremely gravelly sandy loam texture with unweathered volcanic rock at a depth of about 7 inches. The Gachado soil also has a very gravelly sandy clay loam component. The ecological site present is Limy Hills 3-7 inches precipitation zone.

Soils:
Cherioni very cobbly fine sandy loam, 3 to 10 percent slopes
Cherioni-Rock outcrop complex
Pinal gravelly loam

Cherioni soil is a shallow and very shallow and excessively drained sandy loam. This soil is derived dominantly from basalt. The Cherioni very cobbly fine sandy loam, 3 to 10 percent slopes map unit is on basalt flows and also on the summits of basalt hills and mountains.

The Cherioni-Rock outcrop complex map unit is on low hills and the lower slopes of mountains dissected by low stream channels. The soil in this map unit tends to be a very gravelly loam that has accumulated lime just above bedrock. Pinal soil tends to be shallow, well-drained, and often have a duripan 20 inches or less deep. This soil formed in old, gravelly or cobbly valley-fill material derived from mixed rocks on old alluvial fans and stream terraces.

The Pinal gravelly loam map unit is a nearly level sloping soil on alluvial fans around the margins of low hills and mountains and on stream terraces. The associated ecological site for these soils is Limy Upland 3-7 inches precipitation zone.

Soils:
Gunsight-Rillito complex, 0 to 10 percent slopes

Gunsight-Pinal complex, 1 to 10 percent slopes
Gunsight-Cipriano complex, 1 to 15 percent slopes
Gunsight-Chuckawalla complex, 1 to 15 percent slopes

Gunsight soils consist of deep, well-drained soils formed in mixed alluvium on old alluvial fans. Underlying material contains many soft lime masses and semirounded lime concretions. The soil is also moderately alkaline. Gunsight-Rillito complex, 0 to 10 percent slopes map unit is a nearly level to moderately steep soil on old alluvial fans. It is dissected by a series of stream channels up to 30 feet deep. This map unit is about 40 percent Gunsight soils and 40 percent Rillito soils.

The Gunsight-Pinal complex, 1 to 10 percent slopes map unit is a gently sloping to moderately steep soil on old alluvial fans and is also dissected by washes. Angular cobbles and gravel cover 30 to 70 percent of the surface area. This map unit is about 40 percent Gunisght cobbly loam, 30 percent Pinal gravelly loam, and 12 percent Pinamt cobbly loam.

The Gunsight-Cipriano complex, 1 to 15 percent slopes map unit is on fan terraces dissected by washes. This unit is about 50 percent Gunsight soil and 25 percent Cipriano soil. The Cipriano soil is on nearly level and gently sloping summits of fan terraces and is a very shallow excessively drained soil formed in alluvium. Typically, 50 to 90 percent of the surface is covered with pebbles.

The Gunsight-Chuckawalla complex, 1 to 15 percent slopes map unit is on fan terraces also dissected by washes and is about 40 percent Gunsight soil and 35 percent Chuckawalla soil. The Chuckawalla soil is on nearly level and gently sloping summits of fan terraces, deep, well drained, and is formed from alluvium derived dominantly from mixt rocks. Chuckawalla soil typically has 85 to 100 percent of the surface covered by darkly varnished, closely packed pebbles called desert pavement. The corresponding ecological site for these soils is Limy Upland Deep 3-7 inches precipitation zone.

Soils:
Dateland-Cuerda complex, 0 to 3 percent slopes
Perryville-Rillito complex, 0 to 3 percent slopes
Denure-Rillito-Why complex, 1 to 5 percent slopes

The Dateland-Cuerda complex, 0 to 3 percent slopes map unit is on fan terraces and washes. This unit is about 60 percent Dateland soil on the terraces and 30 percent Cuerda soil in the washes. Dateland soil is deep and well drained, formed in alluvium derived from mixed rocks and typically, 1 to 15 percent of the surface is covered with pebbles. Permeability is moderate and available water capacity is high. Cuerda soil is also deep and well drained formed in stratified alluvium derived dominantly from mixed rocks and typically 1 to 10 percent of the surface is covered with pebbles. Permeability is moderate and water capacity is high.

The Perryville-Rillito complex, 0 to 3 percent slopes map unit is level to gently sloping on old alluvial fans and valley plains dissected by washes. This mapping unit is about 35 percent Perryville loam, 30 percent Rillito gravelly loam, 10 percent Perryville sandy loam, and 10 percent Rillito gravelly sandy loam. Perryville soils surround Rillito soils and are nearly gravel free. Rillito soils are on slightly higher, ridgelike positions, and 20 to 50 percent of the surface is gravel.

Denure-Rillito-Why complex, 1 to 5 percent slopes map unit is on fan terraces dissected by washes and is 40 percent Denure soil, 25 percent Rillito soil, and 15 percent Why soil. Denure soil is deep and excessively drained formed in alluvium derived from mixed rocks with 20 to 50 percent of the surface coved with pebbles. Why soil is deep and somewhat excessively drained formed in stratified alluvium derived from mixed rocks and typically 1 to 10 percent of the surface is covered with pebbles. Permeability is moderately rapid and water capacity is moderate. The ecological site that corresponds with these soils is Limy Fan 3 to 7 inches precipitation zone.

Soils:
Agualt loam
Gilman fine sandy loam

The Agualt loam soil consists of deep, well-drained soils formed in recent alluvium that was deposited on flood plains, low terraces, and alluvial fans. This soil is moderately alkaline throughout and in most places is calcareous throughout. This map unit is generally long and narrow and can have inclusions of Gilman loam, Mariposa sandy loam, Antho sandy loam, Carrizo gravelly sandy loam, and Laveen loam soils.

Gilman fine sandy loam is a level to nearly level soil on flood plains, alluvial fans, and low terraces. This soil can be hummocky with an 8 to 14 inch thick sandy loam surface. The ecological site that corresponds to these soils is Loamy Swale 3 to 7 inches precipitation zone.

Soil:
Schenco-Laposa-Rock outcrop complex, 10 to 55 percent slopes

The Schenco-Laposa-Rock outcrop complex, 10 to 55 percent slopes map unit is on schist hills and mountains. This unit is about 35 percent Schenco soil, 20 percent Laposa soils, and 20 percent Rock outcrop. Schenco soil is shallow and well drained formed in alluvium and colluvium derived from schist with typically, 50 to 90 percent of the surface covered with schist channers. Laposa soil is moderately deep and somewhat excessively drained formed in alluvium and colluvium derived from schist with typically 35 to 70 percent of the surface covered with schist channers. Rock outcrop consists of exposed areas of schist where runoff is rapid. The ecological site associated with this soil is Granitic Hills 3 to 7 inches precipitation zone.

Soil:
Carrizo-Momoli complex, 0 to 3 percent slopes

Carrio-Momoli complex, 0 to 3 percent slopes map unit is on long, narrow flood plains (washes) and on fan terraces and alluvial fans in areas where washes emerge from the mountains. This unit is 65 percent Carrizo soil and 25 percent Momoli soil. Carrizo soil is on the nearly level alluvial fans adjoining the washes and Momoli soil is on the higher fan terraces. Carrizo soil is deep and excessively drained formed in recent alluvium derived from mixed rocks with 40 to 80 percent of the surface covered in with pebbles and cobbles. Momoli soil is deep and somewhat excessively drained formed in alluvium derived from mixed rocks with 45 to 75 percent of the surface covered with pebbles. The ecological site associated with this soil is Sandy Wash 3 to 7 inches precipitation zone.

2.3 Biological Resources

2.3.1 Major Land Resource Areas

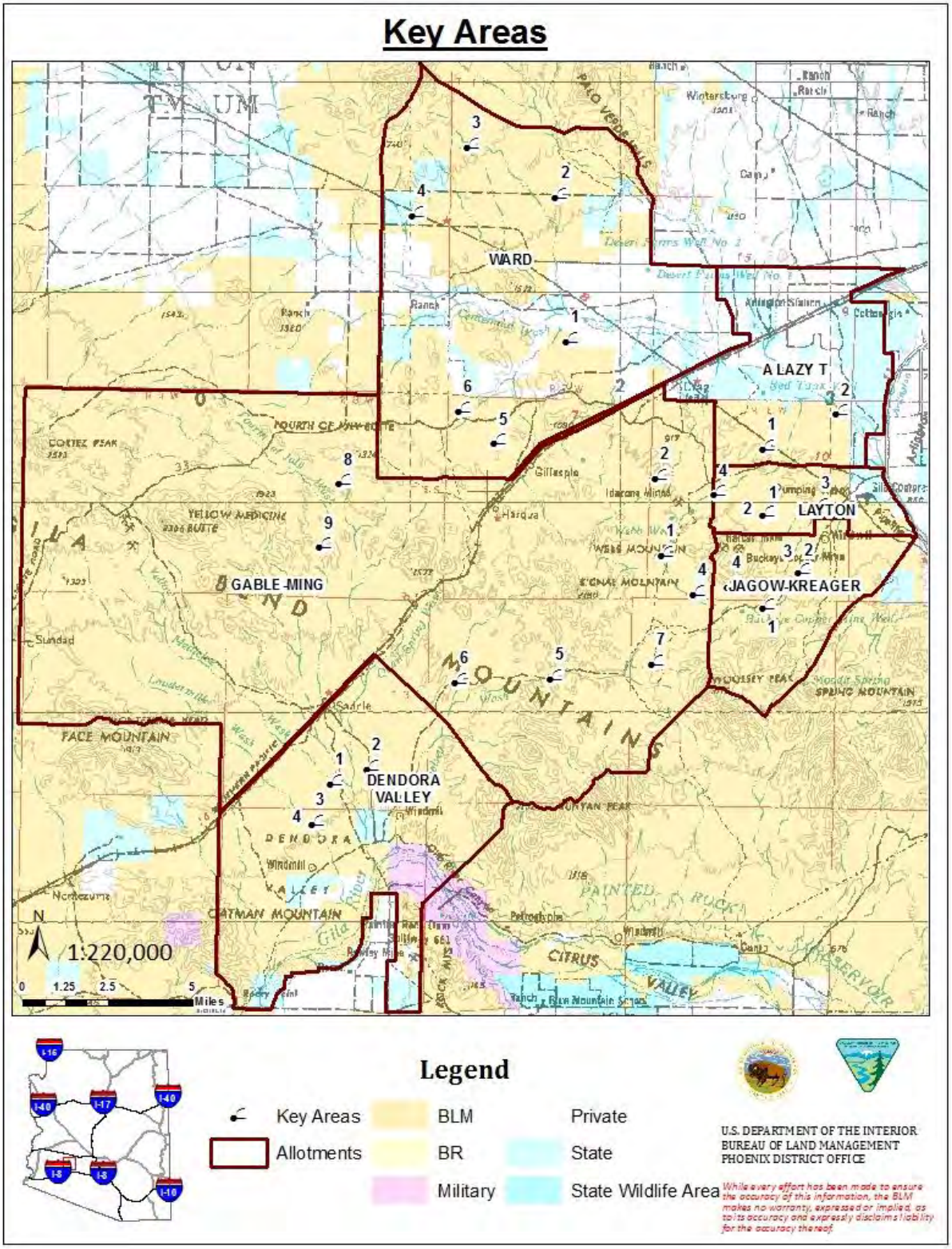
The Complex lies within Major Land Resource Area (MLRA) 40, Sonoran Basin and Range and more specifically this area is part of the Colorado Sonoran Desert Common Resource Area (CRA). MLRAs are described in NRCS Agriculture Handbook 296: "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin" (USDA 2006). MRLAs describe, on a large-landscape scale, the physiography, geology, climate, water, soils, biological resources and general land use. Ecological Site Descriptions produced by the NRCS are organized by MLRA for reference purposes.

2.3.2 Ecological Sites and Associated Vegetation Communities

An ecological site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a specific kind and amount of vegetation. It is the product of all the environmental factors responsible for its development, and it has a set of key characteristics (soils, hydrology, and vegetation) that are included in the ecological site description. Development of the soils, hydrology, and vegetation are all interrelated.

Ecological sites are named and classified based on soil parent material or soil texture and precipitation zone (p.z.). There are several ecological sites that occur within the Complex (Map 3). The dominant ecological sites on public lands within the complex are described below. NRCS provides Ecological Site Descriptions (ESD) used below and are available online at https://esis.sc.egov.usda.gov/.

Map 3: Gable Complex Key Areas



Limy Hills 3-7" p.z. Site ID: R040XC308AZ
Limy Hills 3-7" p.z. site makes up 12,610 acres (5%) of the Complex. This site occurs on sloping and rolling hills to very steep hill slopes from 1 to 70 percent and elevations from 75 to 1,000 feet. These sites suffer from run-off moisture. Soils are very shallow to moderately deep and are gravelly to very gravelly loams, calcareous to the surface, and underlain by schist and metamorphic granitic type rock. The surface is gravel covered and some soils have lime pans on top of the rock. Plant-soil moisture relationships are poor.

The ESD describes a plant community that is a mixture of desert trees such as palo verde (*Parkinsonia microphylla*) and ironwood (*Olneya tesota*), shrubs such as creosote bush (*Larrea tridentata*), and succulents such as saguaro (*Carnegia gigantea*). The understory is a scattering of perennial and annual grasses and forbs. As palatable species decline, less palatable species like brittlebush and cholla increase to dominate the site.

Limy Upland 3-7" p.z. Site ID: R040XC310AZ
Limy Upland 3-7" p.z. sites make up approximately 43,779 acres (17%) of the Complex. This site occurs on upland positions on terraces and alluvial fans, with slopes ranging from 0 to 6 percent and elevations from 400 to 1,000 feet. These sites do not benefit from run-in moisture from adjacent areas and suffers loss from run-off. The surfaces of these soils can be gravelly sandy loam, very gravelly fine sandy loam or extremely gravelly loam. These are shallow soils with coarse fragments throughout and calcareous. These soils have moderate to rapid permeability rates, but can absorb and hold all the moisture the climate supplies. Stability against erosion is good and plant-soil moisture relationships are very good.

The ESD describes a plant community that is predominantly desert shrubs and cacti with creosote bush dominant on the site. Perennial grass cover is sparse and annual grasses and forbs make up a small percentage of the community. Other shrubs that may be found include triangle-leaf bursage (*Ambrosia deltoidea*), white bursage (*Ambrosia dumosa*), and range ratany (*Krameria erecta*). Succulents such as saguaro and ocotillo (*Fouquieria splendens*), and grass such as big galleta (*Pleuriphis rigida*) can also be present in shallow drainages but often make up a small component of the vegetation community. Most of the perennial species found in the potential community are unpalatable. As a result, little change in regards to perennial species composition has occurred with historical heavy grazing. Annual vegetative production is expected to be between 92 and 120 pounds air-dry weight per acre.

Limy Upland Deep 3-7" p.z. Site ID: R040XC3118AZ
Limy Upland Deep 3-7" p.z. ecological site makes up 76,899 acres, or 29%, of the Complex. This site occurs on terraces and alluvial fans with slopes from 0 to 6% with elevation ranging from 400 to 1,000 feet. The soils are deep, but shallow to a layer high in lime. The surface layer ranges from 1 to 4 inches with a very gravelly loam to very stony sandy loam. The subsoil is mostly extremely gravelly sandy loam and permeability is moderately rapid. The soil can absorb and hold all the moisture the climate supplies, but due to slope some of that moisture is lost as run-off. Plant-soil moisture relationships are moderate.

The ESD describes a plant community that is predominantly desert shrubs and cacti with creosote bush dominant on the site. A few other shrubs such as ratany (*Kramaria sp.*) and cacti such as

cholla (*Cylindropuntia sp.*) can occur. Annual grasses and forbs also make up a small percentage of the community. This vegetation community is naturally variable where composition and production varies with yearly conditions, location, aspect and the natural variability of soils. Annual vegetative production is expected to be between 87 and 115 pounds air-dry weight per acre.

Limy Fan 3-7" p.z. Site ID: R040XC306AZ

Limy Fans are the most dominant ecological site on the Complex, making up approximately 112,748 acres, or 43% of the evaluation area. This site occurs on nearly level to gently sloping fan terraces and old stream terraces no longer flooded, with slopes ranging from 1 to 3 percent, and elevations between 75 and 1,000 feet. These are deep soils formed in loamy alluvium of moderate age and from mixed origins. They range from gravelly loam, sandy loam, to fine sandy loam surface textures and are calcareous. Subsurface texture is loamy. Plant-soil moisture relationships are fair.

The ESD describes a plant community made up of a mixture of desert shrubs dominated by creosote bush, but may also include white bursage, and triangle-leaf bursage, cacti such as saguaro, grass such as big galleta, and annual forbs. Winter and summer annual grasses and forbs are abundant in years with above-average moisture in their respective seasons. Annual vegetative production is expected to be between 245 and 375 pounds air-dry weight per acre.

Loamy Swale 3-7" p.z. Site ID: R040XC312AZ

This ecological site is about 1,858 acres (1%) of the Gable Complex and occurs on floodplains, alluvial fans and terraces. Elevation is between 75 and 1,000 feet, and slopes are from 0 to 1%. These sites benefit from run-in moisture from adjacent areas and it suffers from moderate to rapid loss of run-off. These soils are deep to bedrock or other plant root restricting layers. Surface layers can be either loam or silty clay loam. Subsurface soil texture has a minimum depth of 10-15 inches and range in texture from loam to silty clay loam with moderate to moderately slow permeability rates, but can absorb and hold all the moisture the climate supplies. With good vegetative cover, infiltration rates are high and stability against erosion is moderate. Plant-soil moisture relationships are good.

The ESD describes plant community with a mixture of annual and perennial grasses and forbs, and scattered shrubs. Perennial grass such as big galleta can be found here. When grass cover is greatly reduced or depleted, this site is extremely susceptible to gully erosion and woody species quickly increase on the site. When this happens, trees and shrubs such as velvet mesquite (*Prosopis velutina*) and catclaw acacia (*Acacia greggii*) greatly increase and eventually dominate the site. Annual vegetative production is expected to be between 304and 625 pounds air-dry weight per acre.

Granitic Hills 3-7" p.z. Site ID: R040XC305AZ

This site makes up only 442 acres or less than 1% of the Complex and occurs on steep granite, gneiss and schist hills and mountain slopes. It benefits from runoff of the rock outcrop that occurs as the ridges and crests of the mountains. This site suffers from runoff. These soils are shallow to moderately deep over bedrock. Surface soils are 3-6 inches thick, with a mixture of extremely gravelly loam. Underlying layers have moderate permeability that can absorb and hold all the

moisture the climate provides. With good vegetation cover, infiltration rates are moderate and stability against erosion is moderate. Plant-soil moisture relationships are fair.

The ESD describes a plant community that is predominantly a shrub site with an understory of perennial and annual grasses and forbs. Desert shrubs such as creosote bush and white bursage, trees such as palo verde and ironwood, and cacti such as saguaro and cholla are known to occur on this site. The vegetation found on this ecological site is naturally variable and production varies with yearly conditions. Annual vegetative production is expected to be between 158 and 306 pounds air-dry weight per acre.

Sandy Wash 3-7" p.z. Site ID: R040XC318AZ
Sandy Wash sites are found on approximately 4%, or 10,730 acres, of the Complex. This site occurs in a bottom position. Slopes are from 0 to 5 percent, and elevations range from 75 to 1,000 feet. It benefits significantly from run-in moisture from adjacent areas. The soils may suffer from loss from run-off. It occurs as floodplains, low terraces, alluvial fans and drainageways. Soils are deep to bedrock or other plant root restricting layers. Soil surface depth ranges from 6-8 inches with textures ranging from very gravelly loamy sand, loamy sand to silt loam. The underlying layers have rapid permeability and hold all moisture the climate supplies. With good vegetative cover, infiltration rates are high and stability against erosion is poor. Plant-soil moisture relationships are also poor.

The ESD describes a plant community that is a mixture of perennial grasses and forbs, desert trees and shrubs, and annual grasses and forbs. The active washy areas in the site have little vegetation except burrobush and annual grasses and forbs. Perennial grass such as big galleta, trees such as blue palo verde (*Parkinsonia florida*), foothill palo verde, velvet mesquite, and ironwood, shrubs such as wolfberry (*Lycium sp.*), catclaw acacia, and creosote bush. Annual vegetative production is expected to be between 950 and 1,675 pounds air-dry weight per acre.

2.3.4 General Wildlife Resources

Game Species and Furbearers
Within the Complex, habitat exists for big game species such as desert bighorn sheep (*Ovis canadensis mexicana*, Map 4), mule deer (*Odocoileus hemionus crooki*), javelina (*Pecari tajacu*), and mountain lion (*Puma concolor*). The Complex also provides suitable habitat for common furbearers, including raccoons (*Procyon lotor*), bobcats (*Lynx rufus*), coyotes (*Canis latrans*), gray foxes (*Urocyon cinereoargenteus*), striped and spotted skunks (*Mephitis mephitis*), and badgers (*Taxidea taxus*). Common small game species include Gambel's quail (*Callipepla gambelii*) mourning dove (*Zenaida macroura*), and white-winged dove (*Z. asiatica*), and cottontail rabbits (*Sylvilagus audubonii*).

Reptiles
A variety of reptiles may be present in or near the Complex including rosy boas (*Lichanura trivirgata*), chuckwallas (*Sauromalus ater*), western diamondback rattlesnake (*Crotalus atrox*), sidewinder rattlesnake (*Crotalus cerastres*), Gila monster (*Heloderma suspectum*) and desert iguanas (*Dipsosaurus dorsalis*).

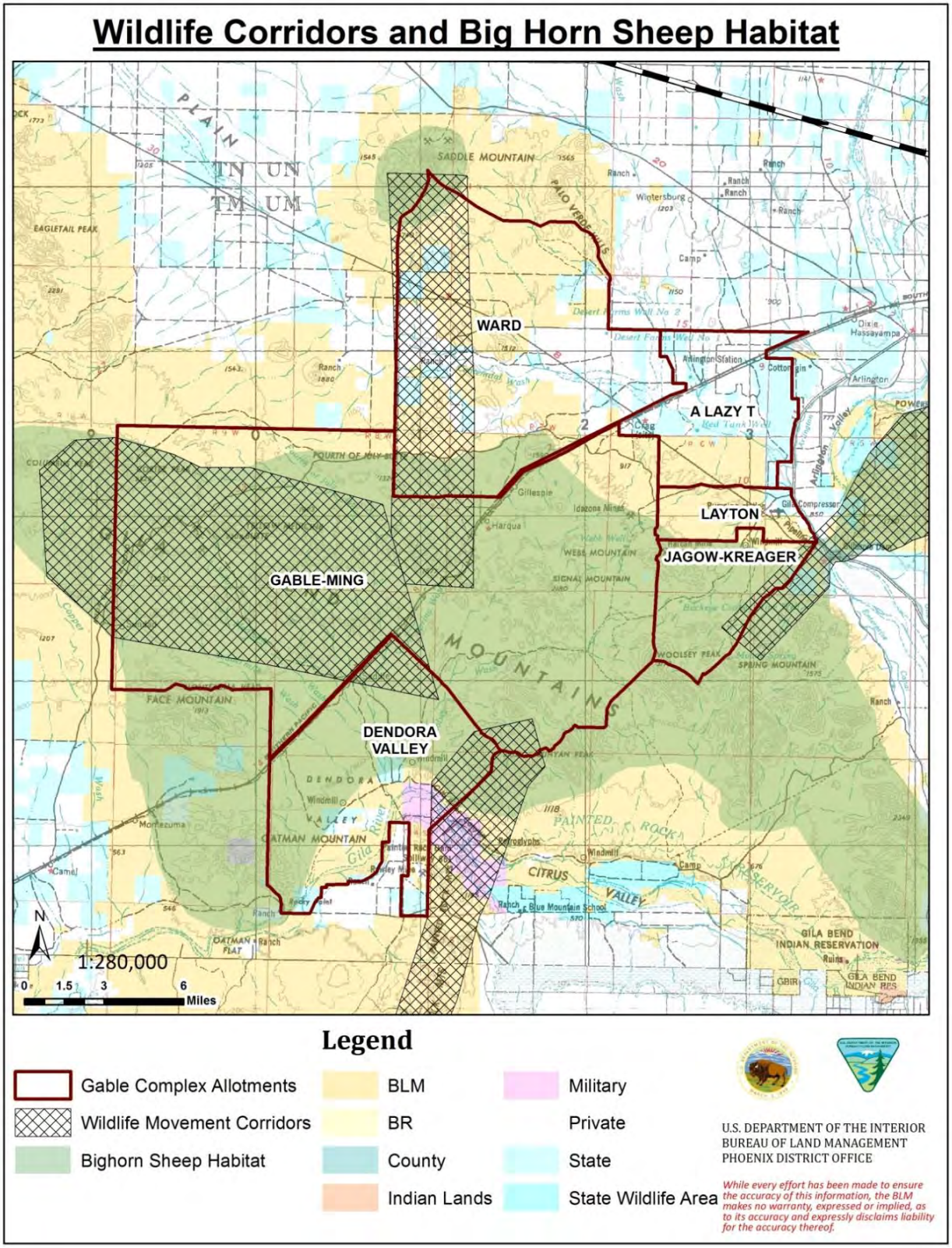
Aquatic and Riparian Obligate Species

Fish are not present in the Complex due the lack of persistent surface water, which also limits the occurrence of riparian obligate migratory bird species and amphibians.

Raptors

Xero-riparian and upland habitat on the Complex supports red-tailed hawks (*Buteo jamaicensis*), Harris' hawks (*Parabuteo unicinctus*), and American kestrels (*Falco sparverius*). Owl species may include the western screech owl (*Megascops kennicottii*), great-horned owl (*Bubo virgineanus*), elf owl (*Micrathene whitneyi*), and the barn owl (*Tyto alba*).

Map 4: Wildlife Corridors and Bighorn Sheep Habitat.



2.3.5 Special Status Species, T&E

Sonoran Desert Tortoise

The Sonoran desert tortoise (*Gopherus morafkai*) is a BLM sensitive species that may occupy upland areas in the Complex. Tortoises tend to occupy hillsides and ridges with outcrops of large boulders as well as incised washes possessing caliche caves, but may be found in lower densities elsewhere. Desert washes are important to Sonoran desert tortoises as they provide exposed banks with variable aspects, exposed caliche caves for locating burrows, and xeroriparian vegetation for thermal cover (Oftedal 2002). Their diet consists of annual forbs (30.1%), perennial forbs (18.3%), grasses (27.4%), woody plants (23.2%) and prickly pear fruit (1.1%) (Van Devender et al. 2002).

The Gable complex contains category II and category III desert tortoise habitat (Map 5), which are lower in relative value than Category I. 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) populations are low to medium density and not contiguous with medium or high density.

Table 3: Desert Tortoise Habitat Acerages by Allotment

Allotment	Category I Acres	Category II Acres	Category III Acres
A Lazy T	0	0	0
Dendora Valley	0	5,933	3,640
Gable-Ming	0	98,240	4,115
Jagow-Kreager	0	10,909	0
Layton	0	1,308	0
Ward	0	14,789	0
Complex Totals	0	131,179	7,755

Sonoran Pronghorn

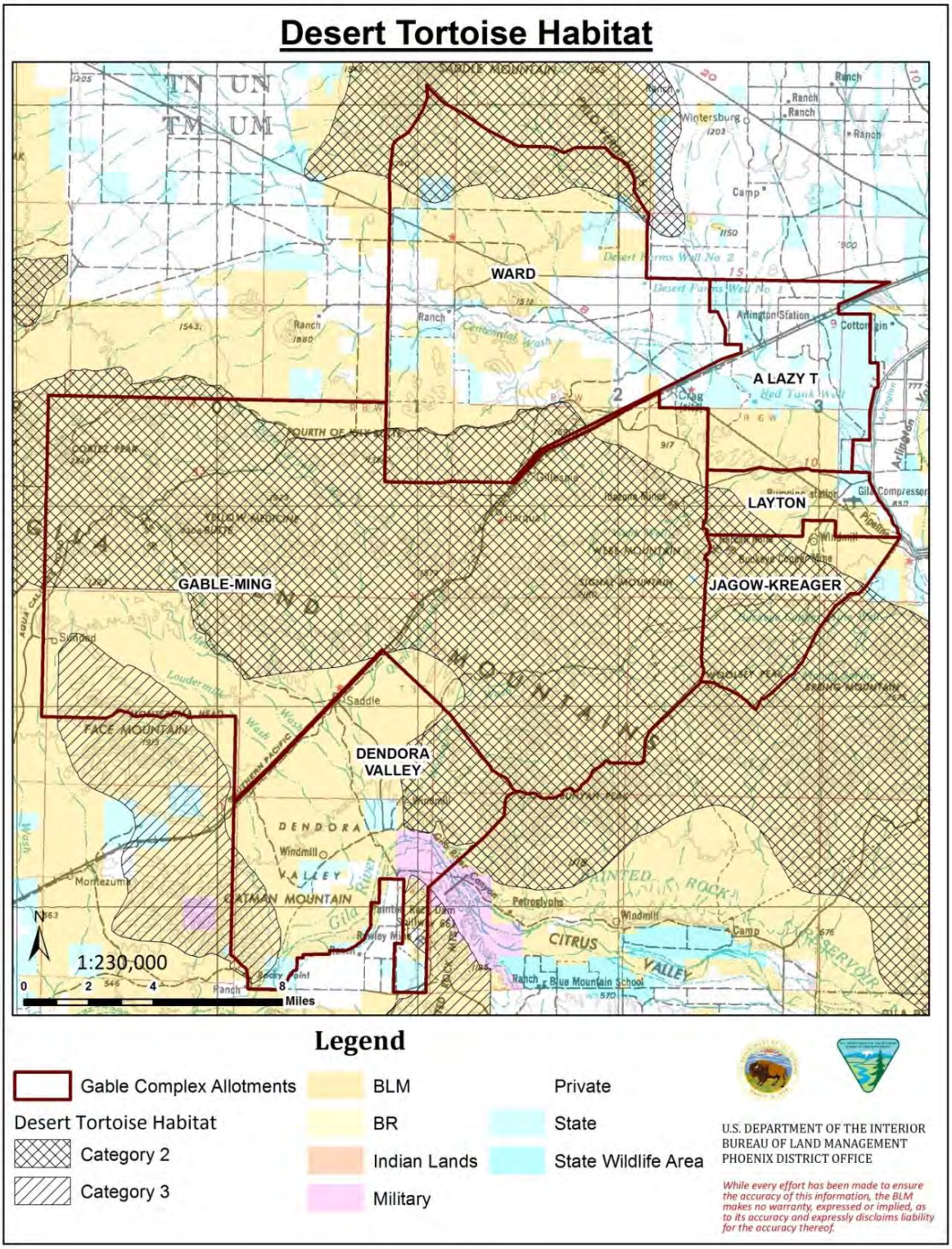
Sonoran pronghorn (*Antilocapra americana sonoriensis*) is listed as endangered under the Endangered Species Act, whose current range occurs south of Interstate 8 (a likely migration barrier), which is itself approximately 20 miles south of the Complex. The Complex does, however, fall entirely within Sonoran pronghorn experimental/non-essential habitat, which has been targeted for reintroduction. In July, 2015 a small group (one buck and two does) of Sonoran pronghorn were observed (via tracking collars) to have migrated east from the KOFA National Wildlife Refuge to the west side of the Gila Bend Mountains (approximately 45 miles). It is uncertain if these individuals will remain in the area, but their presence indicates favorable habitat conditions can exist in the vicinity of the Complex.

Lesser Long Nosed Bat

The lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) is a BLM sensitive species that functions as a saguaro cactus and agave (*Agave sp.*) pollinator. Lesser long-nosed bat density is typically higher near established maternity roost sites from which they may travel up to 40 miles

to forage in relatively high density saguaro cactus stands. Forty mile forage buffers, developed around maternity roost sites, lie more than 10 miles south of the Complex.

Map 5: Desert Tortoise Habitat



2.3.6 Wilderness Areas

The Wilderness Act allows livestock grazing and necessary facility maintenance to support a livestock operation to continue when established prior to the wilderness designation. Two wilderness areas occur within the Complex. Both of these wilderness areas provide habitat for many Sonoran desert wildlife species and outstanding opportunities for primitive recreation (Map 1):

- Woolsey Peak Wilderness Area

  Location and description: This 64,000 acre wilderness is in southwest Maricopa County, 11 miles northwest of Gila Bend, Arizona and 32 miles southwest of Phoenix, Arizona. It is adjacent to the 13,350 acre Signal Mountain Wilderness. The wilderness area encompasses a major part of the Gila Bend Mountains. The diverse topography and geology include sloping lava flows, basalt mesas, rugged peaks and ridges. The 3,270 foot Woolsey Peak, rising 2,500 feet above the Gila River, is a geographic landmark visible throughout southwestern Arizona. The area contains a surprising variety of vegetation, including saguaro, cholla, paloverde, creosote and bursage. The desert washes are lined with mesquite, ironwood, and paloverde trees. The diversity, ruggedness and size of the wilderness offer excellent opportunities for solitude and primitive recreation; backpacking, horseback riding, day hiking, wildlife observation, photography and sightseeing.

- Signal Peak Wilderness Area

  Location and description: The 13,350 acre Signal Mountain Wilderness is located in southwest Maricopa County, 18 miles northwest of Gila Bend and 35 miles southwest of Phoenix. The wilderness area is adjacent to the 64,000 acre Woolsey Peak Wilderness just to the southeast, separated by a four-wheel drive road. The wilderness offers a variety of scenery, including sharp volcanic peaks, steep-walled canyons, arroyos, craggy ridges and outwash plains. Signal Mountain, at the Complex center, rises 1,200 feet above the desert floor to an elevation of 2,182 feet. Paloverde-saguaro and creosote bush-bursage plant communities are found throughout bajada and upland areas, while washes are lined with mesquite, ironwood, acacia and paloverde trees. The wilderness provides several primitive recreation opportunities, such as rock climbing in the canyons and valleys around Signal Mountain, day and overnight hiking, rock collecting, and deer and quail hunting.

2.3.7 Recreational Resources

Despite the proximity of this area to the Phoenix metropolitan area, the Gable Complex has limited recreational use. A popular recreational activity in the area is off-road highway driving. There are approximately 495 miles of routes through the complex to explore including wilderness corridor between Woolsey Peak and Signal Mountain Wilderness Areas. The numerous livestock and wildlife waters in the area provide an opportunity for dove, duck and quail hunting. Other popular recreational activities in the area include hiking, wildlife viewing, rock climbing, and rock collecting.

3.0 Grazing Management

3.1 Grazing History

The Gila River has always been a lifeline for the people of southern Arizona. In the Arlington Valley, Native Americans used the Gila's floodplains to support agriculture and shortly after the arrival of the Spanish in the 1700's, livestock. Initially, livestock were mostly limited to the floodplain of the river with the exception of some pot holes and low spots that collected water in the uplands following heavy rains.

In the 1860's settlers began to develop farms and livestock operations the area. These settlers also began to build dirt tanks and dig wells in the uplands to provide water for livestock in the more arid portions of the landscape. These livestock operations remained relatively small until during and after World War II when the practice of moving large numbers of steers to utilize ephemeral forage following wet periods became common practice (Robinett 1997).

The Gable family has been farming and ranching near Arlington since the early 1900s and were involved with the division of public grazing lands into allotments following the passage of the Taylor Grazing Act in 1934. The Gable family has also played a major role in the development and maintenance of range improvements such as fencing and livestock/wildlife waters in this area.

In 1968 a Special Ephemeral Rule was published in the Federal Register authorizing range managers to classify allotments as ephemeral (annual) rangelands in accordance with 43 CFR 4115.2-4. Many allotments in the area were converted to ephemeral use. Only the allotments where cow-calf operations were in place kept their perennial use status. However, the perennial allotments of the Complex are stocked very low and are run in an ephemeral nature by adding and removing livestock in relation to the amount of precipitation the area receives.

3.2 Current Livestock Grazing Management

Today, five of the six allotments within the Complex are managed or comanaged by one or multiple members of the Gable family. The A Lazy T allotment is managed by a long-term rancher/farmer from Arlington, Arizona. The fashion in which allotments are managed weighs heavily on the classification of the allotment.

In the Lower Sonoran Resource Management Plan (RMP) of 2012, the Complex allotments were classified as either ephemeral or perennial-ephemeral (Table 2).

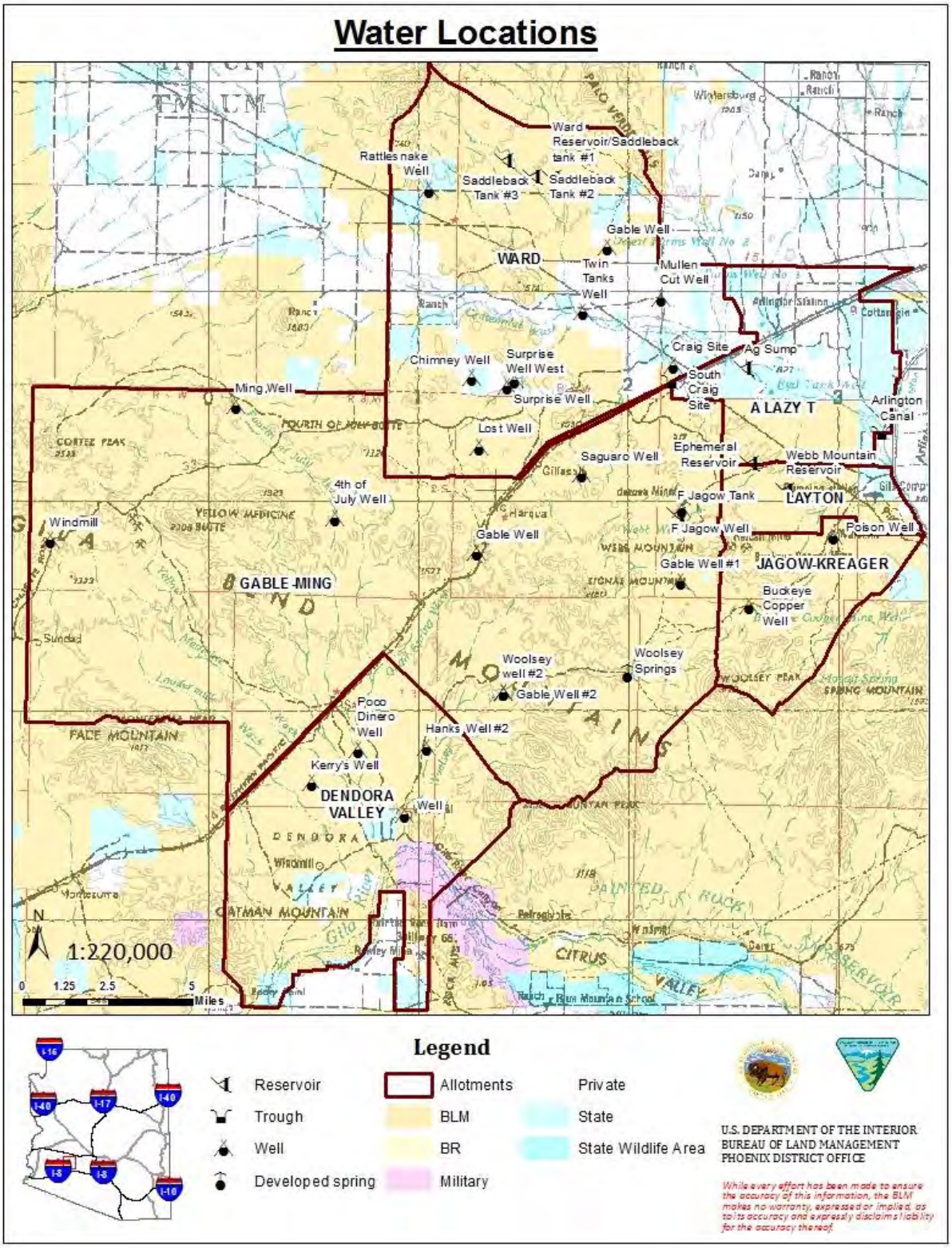
These classifications correspond to the following types of designated rangelands:

- Ephemeral - rangelands that do not consistently produce enough forage to sustain a year round livestock operation but may briefly produce unusual volumes of forage to accommodate livestock grazing. There is a special rule for ephemeral range.

- Perennial-Ephemeral – rangelands that produce perennial forage every year and periodically provide additional ephemeral vegetation. In a year of abundant moisture and favorable climatic conditions, annual forbs and grasses add materially to the total grazing capacity.

Both the Gable-Ming and Ward allotments of the Complex allotments are classified as perennial-ephemeral where livestock are periodically rotated between water sources to utilize perennial forage (Map 6). The five other allotments are classified as ephemeral only (Table 2). Livestock operators on perennial-ephemeral allotments are offered 10-year permits from the BLM that state the number and kind of livestock permitted annually, as well as the period of use for each allotment. Ephemeral forage is utilized through separate ephemeral use authorizations in accordance with land health standards and the Arizona grazing guidelines discussed in the RMP's Standard Operating Procedures and Best Management Practices as set forth in the Candidate Conservation Agreement for the Sonoran desert tortoise in Arizona. These best management practices limit ephemeral grazing to provide adequate forage for all species of wildlife.

Map 6: Gable Complex Water Locations



3.3 Mandatory Terms and Conditions for Permitted Use

The Complex allotments, their classifications, size, and amount of permitted use are listed in Table 1. Permitted use is expressed in animal unit months (AUMs), which means the amount of forage necessary to sustain one cow, or its equivalent, for a period of one month. Terms and conditions for grazing permits and leases must be in conformance with resource management objectives and program constraints, as identified in land use plans.

Table 2. Mandatory Terms and Conditions for the Gable Complex

Allotment	Allotment Number	Livestock Number	Livestock Kind	Percent Public Land	Type Use	Authorized AUMs
A Lazy T	03002	0	Cattle	100	Ephemeral	0
Dendora Valley	03024	0	Cattle	95	Ephemeral	0
Gable-Ming	03032	350	Cattle	100	Perennial/Ephemeral (Active)	4200
Jagow-Kreager	03044	0	Cattle	100	Ephemeral	0
Layton	03049	0	Cattle	100	Ephemeral	0
Ward	03086	150	Cattle	82	Perennial/Ephemeral (Active)	1476

4.0 Objectives

4.1 Relevant Planning and Environmental Documents

Livestock grazing on BLM lands is managed under 43CFR 4100, and is based on the Taylor Grazing Act (43 USC 315, 315a-315r), Federal Land Policy Management Act (FLPMA) (43 USC 1701 et seq.), the Public Rangeland Improvement Act (43 USC 1901 et seq.), and other executive and public land orders. Grazing leases and permits are issued according to 43 CFR 4130.2(d) and generally last 10 years. When leases or permits are scheduled for renewal, the BLM evaluates resource conditions within the allotments consistent with the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration as described in Appendix B. Grazing practices are managed to achieve resource and grazing objectives, as described in the terms and conditions of the grazing permit or lease. All of the Complex allotments are authorized under section 3 of the Taylor Grazing Act of 1934 as grazing permits.

The BLM is responsible for establishing the appropriate levels and management strategies for livestock grazing in these allotments. Grazing permits issued must be in compliance with the multiple use and sustained yield concepts of FLPMA and the Fundamentals of Rangeland Health (43 CFR 4180), and be in accordance with the Guidelines for Grazing Administration while continuing to achieve Arizona Standards for Rangeland Health.

Land Health Standards:
On April 28, 1997, the Secretary of Interior approved the implementation of the *Arizona Standards for Rangeland Health and Guidelines for Grazing Administration* for all Land Use Plans in Arizona. The purpose of the Standards and Guidelines is to maintain or improve the health of the public rangelands. Standards and guidelines are intended to help the Bureau, rangeland users and others focus on a common understanding of acceptable resource conditions and work together to achieve that vision. Standards and Guidelines were incorporated into Phoenix District land use plans in 1997 and into the RMP in 2012.

As defined by the Arizona Resource Advisory Council, "Standards" are goals for the desired condition of the biological and physical components and characteristics of rangelands. "Guidelines" are management approaches, methods, and practices that are intended to achieve a standard. Guidelines are developed and applied consistent with the desired condition and within the site's capability and specific public land uses, and may be adjusted over time. Arizona S&Gs are defined as the following:

Standard 1 - Upland Sites

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).

Standard 2 - Riparian - Wetland Site

Riparian-wetland areas are in proper functioning condition.

Standard 3 - Desired Resource Conditions

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

4.2 Key Area Objectives

Specific Key Area objectives step down from the Desired Future Condition, also known as desired plant communities (DPCs), objectives found in the RMP (Lower Sonoran RMP). These Key Area specific objectives are designed to assess public land conformance to the Arizona Standards for Rangeland Health as well as the Taylor Grazing Act; FLPMA; ESA; Clean Water Act; and suitable laws, regulations, and policies.

DPC objectives were developed for each Key Area within the Complex by an interdisciplinary team of BLM resource specialists and biologists. There are 28 active Key Areas on the Complex. The table below shows the active key areas and ecological sites for each key area within the complex:

Allotment	Key Area	Ecological Site
A Lazy T	KA1	Limy Fan 3-7"
	KA2	Loamy Swale 3-7"
Dendora Valley	KA1	Sandy Wash 3-7"
	KA2	Sandy Wash 3-7"
	KA3	Loamy Swale 3-7"
	KA4	Limy Upland 3-7"
Gable-Ming	KA1	Sandy Wash 3-7"

	KA2	Limy Upland Deep 3-7”
	KA4	Limy Upland 3-7”
	KA5	Sandy Wash 3-7”
	KA6	Limy Upland 3-7”
	KA7	Limy Upland 3-7”
	KA8	Limy Hills 3-7”
	KA9	Sandy Wash 3-7”
Jagow-Kreager	KA1	Sandy Wash 3-7”
	KA2	Sandy Wash 3-7”
	KA3	Limy Upland 3-7”
	KA4	Granitic Hills 3-7”
Layton	KA1	Sandy Wash 3-7”
	KA2	Limy Upland 3-7”
	KA3	Limy Upland 3-7”
	KA4	Sandy Wash 3-7”
Ward	KA1	Loamy Swale 3-7”
	KA2	Limy Upland 3-7”
	KA3	Sandy Wash 3-7”
	KA4	Sandy Wash 3-7”
	KA5	Limy Hills 3-7”
	KA6	Sandy Wash 3-7”

DPC objectives detail a site-specific plant community, which, when obtained, will assure rangeland health, state water quality standards, general wildlife habitat and habitat for endangered, threatened and sensitive species. Arizona Standards for Rangeland Health and DPC objectives, and the rationale for each objective, are given below.

4.2.1 Arizona Standards for Rangeland Health Standard 1- Upland Sites, applies to all key areas.

Objective: Maintain or restore upland, channel, and riparian components of watershed that help stabilize or improve watershed conditions; and disturbance of sensitive soil surfaces, including those classified as highly susceptible to wind and water erosion and those with protective desert pavement or well-developed cryptogramic crust, would be avoided (Lower Sonoran RMP). Soil erosion on the key area is appropriate to the ecological site on which it is located. Factors indicating conformance to Standard 1 include ground cover, litter, vegetative foliar cover, flow patterns, rills, and plant pedestalling in accordance to developed NRCS Ecological Site Guides and/or Reference Sheets. Deviations that are “none to slight” or “slight to moderate” from the appropriate site guide or reference are considered meeting the Standard. Departures of Moderate or greater will not meet the Standard except in cases where the departure is documented as showing an improvement of land health over what is expected on a reference site.

4.2.2 Arizona Standards for Rangeland Health Standard 2 – Riparian Sites

Objective: Ensure wetlands and riparian areas are functioning appropriately and are consistent with Land Health Standards. There are no wetland or riparian areas within the Complex; therefore, Standard 2 does not apply and no objectives were established.

4.2.3 Arizona Standards for Rangeland Health Standard 3- Desired Resource Condition Objectives

Objective: Maintain or restore vegetative communities to achieve desired future conditions (DFCs), also known as desired plant communities (DPCs), as described in NRCS Ecological Site Descriptions, to protect soils from wind and water erosion and to maintain vegetation communities natural range of variation in plant composition (Lower Sonoran RMP).

The BLM ascertains achievement of Standard 3 by determining how the existing vegetation and ground cover of a key area differs from the DPC for the respective ecological site. If 50% or more of the objectives are not met the site fails to achieve this standard.

For this standard, DPC objectives are site-specific. Therefore, Key Areas located on similar stratum may have different DPC objectives. This is due to differences in slope, elevation, aspect and rainfall factors, as well as other site potential limiting factors such as prior disturbance, rock outcroppings, or heavy gravel cover.

The following Key Area specific DPCs would be expected to provide habitat for wildlife species and prevent accelerated erosion on the sites.

Key Area Specific Desired Plant Community Objectives

A Lazy T Allotment:

A Lazy T Key Area 1:

Key Area 1, Limy Fan 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥10%
- Maintain a composition of perennial grass ≥10%
- Maintain a cryptogram cover of ≥10%
- Maintain a bare ground cover of ≤35%

Rationale:

This Key Area is located at an elevation of approximately 875 feet. This site is approximately 0.9 miles northeast of an ephemeral reservoir (Map 3 and 6).

There is no reference sheet for Limy Fan 3-7"p.z. (R040XB207AZ). Therefore, the rational for DPC objectives is taken from the NRCS Limy Fan 7-10"p.z. reference sheet (R040XB207AZ). The reference sheet shows a canopy cover of 10-15% with a composition of 65% shrubs, 5% trees and 30% succulents. The ecological site guide shows the potential for perennial grass to make up 10-15% of the annual production on the site. Maintaining or exceeding a vegetative canopy cover of 10% and a perennial grass composition of 10% is appropriate for this site and can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60% and a cryptogram cover class from 10-15%. Maintaining the midpoint or less of the bare ground cover class at 35% and a cryptogram cover of ≥10% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

A Lazy T Key Area 2:

Key Area 2, Loamy Swale 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover at ≥15%.
- Maintain a tree composition of ≥25%
- Maintain a Bare Ground cover class of ≤23%

Rationale:
This Key Area is located in Centennial Wash with less than 5% slope at an elevation of approximately 797 feet. This site is located approximately 1.4 miles northwest of the Arlington Canal (Map 3 and 6).

Rational for DPC objectives is taken from NRCS Loamy Swale 3-7"p.z. reference sheet (R040XC312AZ). The reference sheet shows a canopy cover of 15-25%. The data shows that this site has transitioned to a tree/shrub, namely mesquite, dominated site. The ecological site description for this transition state shows a composition of shrubs to be 70-75% and trees 25-30%. Maintaining or exceeding a vegetative canopy cover of 15% and a tree composition of 25% would provide cover for wildlife and erosion control appropriate for this site. The reference sheet shows bare ground to be between 5-50%. Maintaining the midpoint or less of the bare ground cover class at ≤23% is appropriate to this site and would be expected to prevent accelerated erosion on this naturally bare site.

Dendora Valley Allotment:
Dendora Valley Key Area 1:
Key Area 1, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:
This Key Area is located along the green line of a large ephemeral wash at an elevation of approximately 650 feet. This site is approximately one mile northeast from Kerry's Well #3 and 0.9 miles southwest of Poco Dinero Well (Map 3 and 6).

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% provides cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Dendora Valley Key Area 2:
Key Area 2, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a perennial grass composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:
This Key Area is located along the green line of a large ephemeral wash at an elevation of approximately 630 feet. This site is approximately 0.8 miles southeast of Poco Dinero Well and 1.4 miles southwest of Hank's Well #2 (Map 3 and 6).

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. Maintaining or exceeding a vegetative canopy cover of 60% and a perennial grass composition of 10% is appropriate for this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Dendora Valley Key Area 3:
Key Area 3, Loamy Swale 3-7" precipitation zone ecological site

- Maintain a perennial grass composition of ≥66%
- Maintain vegetative canopy cover at ≥15%.
- Maintain a Bare Ground cover class of ≤23%

Rationale:
This Key Area is located in a narrow loamy swale surrounded by limy uplands at an elevation of approximately 604 feet with a 1% slope and an eastern aspect. This site is located approximately 0.8 miles southeast of Kerry's Well #3 and 1.5 miles north of the Alamo/Dunegan Well site (Map 3 and 6).

Rational for DPC objectives is taken from NRCS Loamy Swale 3-7"p.z. reference sheet (R040XC312AZ). The reference sheet shows a canopy cover of 15-25%, with a composition of 66-71% perennial grasses, 11-12% forbs, 16-19% shrubs, and 1-3% trees. Fire scars on the saguaros indicate that this site was previously burned. Maintaining or exceeding a perennial grass composition of 66% and a vegetative canopy cover of 15% would be expected to provide cover and erosion control appropriate for this site. The reference sheet shows bare ground to be between 5-50%. Maintaining the midpoint or less of the bare ground at 23% is appropriate to this site and would be expected to prevent accelerated erosion on this naturally bare site.

Dendora Valley Key Area 4:
Key Area 4, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre
- Maintain a Bare Ground cover class of ≤35%

Rationale:
This Key Area is located at an elevation of approximately 615 feet with a northeast exposure. This site is approximately 0.8 miles southeast of Kerry's Well #3 (Map 3 and 6).

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheets show a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The cover is well dispersed throughout the site. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. This site is located on a rise with a small shallow drainage towards the end. The majority of this site receives little to no run-on moisture and is inherently barren. Given this site's current condition, maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60%. Maintaining the midpoint or less of the bare ground cover class at 35% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Allotment:

Gable-Ming Key Area 1:

Key area 1, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:

This Key Area is located approximately one mile north of Gable Well #1 and at an elevation of approximately 900 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Key Area 2:

Key area 2, Limy Upland Deep 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥300 plants per acre
- Maintain a density of ratany species ≥20 plants per acre
- Maintain a Bare Ground cover class of ≤35%

Rationale:

This Key Area has a northwestern aspect and an elevation of approximately 883 feet. This site is also approximately 1.25 miles north of Jagow Well (Map 3).

Due to the incomplete status of the Limy Upland Deep 3-7"p.z. reference sheet (R040XC311AZ), Rational for the DPC objectives is taken from the NRCS Limy Upland Deep 7-10"p.z. reference sheet (R040XC310AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees, and 30% succulents. The ecological site guide shows a density of creosote bush from 300 to 800 plants per acre and a density of ratany from 20 to 100 plants per acre. Maintaining or exceeding a vegetative canopy cover of 20%, a density of creosote bush on the site of 300 plants per acre, and a density of ratany species on the site of 20 plants per acre can provide cover and forage for wildlife and soil site stability appropriate for this site. The reference sheet calls for a bare ground cover class from 10-60%. Maintaining the midpoint or less of the bare ground cover class at 35% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Key Area 4:

Key area 4, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre
- Maintain a Bare Ground cover class of ≤5%

Rationale:

This Key Area is located at an elevation of approximately 1,050 feet with a west exposure. This site is also approximately 1 mile southeast of Gable Well #1 (Map 3 and 6).

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. Maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60%. However, due to the higher rock/gravel cover (81%) present on this site, maintaining the bare ground cover class of 5% or less is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Key Area 5:

Key area 5, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:

This Key Area is located approximately 2.1 miles west of Woolsey Spring and 0.2 miles east of a wildlife water catchment at an elevation of approximately 879 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is

perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Key Area 6:

Key area 6, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre
- Maintain a Bare Ground cover class of ≤35%

Rationale:

This Key Area is located at an elevation of approximately 949 feet with a west exposure. This site is also approximately 1.1 mile west of Gable Well #2 (Map 3 and 6).

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. Maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60%. Maintaining the midpoint or less of the bare ground cover class at 35% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Key Area 7:

Key area 7, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre
- Maintain a Bare Ground cover class of ≤35%

Rationale:

This Key Area is located at an elevation of approximately 1,183 feet with a west exposure and a slope of 1-2%. This site is approximately 1 mile east-northeast of Woolsey Spring (Map 3 and 6).

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. Maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground

cover class from 10-60%. Maintaining the midpoint or less of the bare ground cover class at 35% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Key Area 8:

Key area 8, Limy Hills 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥10%
- Maintain a composition of shrubs ≥40%
- Maintain a composition of trees ≥40%
- Maintain a Bare Ground cover class of ≤5%

Rationale:

This Key Area is located at an elevation of approximately 1,019 feet with a south exposure. This site is 1.2 miles north of 4th of July Well (Map 3 and 6).

Due to the incomplete stats of the Limy Hills 3-7"p.z. reference sheet (R040XC308AZ), rational for DPC objectives is taken from both NRCS Limy Hills 3-7"p.z. reference sheet (R040XC308AZ) and Limy Slopes 7-10"p.z reference sheets (R040XB209AZ). The reference sheet for is site shows a canopy cover of 5-10% with vegetation composition consisting of 40-43% shrubs, 40-43% trees, 7-10% forbs, and 7-10% grass. Maintaining or exceeding a composition of shrubs of 40% and a composition of trees of 40% on this site can provide diverse cover and structure for wildlife and soil site stability. Maintaining or exceeding a vegetative canopy cover of 10% is appropriate for this inherently barren site. Due to the high rock/gravel cover (76%) present on this site, maintaining the bare ground cover class of 5% or less is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Gable-Ming Key Area 9:

Key area 9, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:

This Key Area is located approximately one mile south of 4th of July Well at an elevation of approximately 890 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Jagow-Kreager:

Jagow-Kreager Key Area 1:

Key area 1, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:

This Key Area is located approximately 0.8 miles east of Buckeye Copper Well at an elevation of approximately 920 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Jagow-Kreager Key Area 2:

Key area 2, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:

This Key Area is located approximately 1.2 miles south of Poison Well at an elevation of approximately 915 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Jagow-Kreager Key Area 3:

Key area 3, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre

- Maintain a Bare Ground cover class of ≤35%

Rationale:
This Key Area is located at an elevation of approximately 930 feet with a west exposure (Map 3 and 6). This site is approximately 1.2 miles southwest of Poison Well.

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. Maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60%. Maintaining the midpoint or less of the bare ground cover class at 35% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Jagow-Kreager Key Area 4:
Key area 4, Granitic Hills 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥5%
- Maintain a composition of shrubs of ≥65%
- Maintain a composition of trees of ≥1%
- Maintain a Bare Ground cover class of ≤1%

Rationale:
This Key Area is located at an elevation of approximately 1,078 feet with a south-southwest exposure (Map 3 and 6). This site is approximately 0.9 miles northwest of Buckeye Copper Well.

Rational for DPC objectives is taken from NRCS Granitic Hills 3-7"p.z. reference sheet (R040XC305AZ). The reference sheet shows a canopy cover of 5-10%, of which 65-75% shrubs, 15-25% subshrubs, and 1-5% trees. Maintaining or exceeding a vegetative canopy cover of 5%, a composition of shrubs of 65%, and a composition of trees of 1% is appropriate for this site and can provide adequate cover for wildlife and soil site stability. The reference sheet shows bare ground cover to be between 1-20% due to the higher rock/gravel cover present on this site (83%), maintaining the bare ground cover class at 1% or less is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Layton Allotment
Layton Key Area 1:
Key area 1, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:

This Key Area is located approximately one mile south of Webb Mountain Reservoir at an elevation of approximately 912 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Layton Key Area 2:
Key area 2, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre
- Maintain a Bare Ground cover class of ≤5%

Rationale:
This Key Area is located at an elevation of approximately 920 feet with a northeast exposure. This site is approximately one mile south of Webb Mountain reservoir (Map 3 and 6).

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. Maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60%; however, due to the higher rock/gravel cover present on this site (74%), maintaining the bare ground cover class at 5% or less is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Layton Key Area 3:
Key area 3, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre
- Maintain a Bare Ground cover class of ≤35%

Rationale:
This Key Area is located at an elevation of approximately 737 feet with a south exposure. This site is approximately 1 mile from Poison Well (Map 3 and 6).

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. Maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60%. Maintaining the midpoint or less of the bare ground cover class at 35% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Layton Key Area 4:
Key area 4, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative foliar cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:
This Key Area is located approximately two miles from Webb Mountain Reservoir at an elevation of approximately 848 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Ward Allotment:
Ward Key Area 1:
Key area 1, Loamy Swale 3-7" precipitation zone ecological site
Loamy Swale 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover at ≥15%.
- Maintain a tree composition of ≥25%
- Maintain a Bare Ground cover class of ≤23%

Rationale:
This Key Area is located in a loamy swale at an elevation of approximately 920 feet. This site is located approximately 0.7 miles south of Twin Tanks Well and corrals (Map 3 and 6).

Rational for DPC objectives is taken from NRCS Loamy Swale 3-7"p.z. reference sheet (R040XC312AZ). The reference sheet shows a canopy cover of 15-25%. The data shows that this site has transitioned to a tree/shrub dominated site. The ecological site description for this

transition state shows a composition of shrubs to be 70-75% and trees 25-30%. Maintaining or exceeding a vegetative canopy cover of 15% and a tree composition of 25% would provide erosion control appropriate for this site. The reference sheet shows bare ground to be between 5-50%. Maintaining the midpoint or less of the bare ground cover class at 23% is appropriate to this site and would be expected to prevent accelerated erosion on this naturally bare site.

Ward Key Area 2:

Key area 2, Limy Upland 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥20%
- Maintain a density of creosote bush ≥50 plants per acre
- Maintain a Bare Ground cover class of ≤35%

Rationale:

This Key Area is located at an elevation of approximately 1,025 feet. This site is approximately 0.8 miles southeast of Saddleback Tank #1 (Map 3 and 6).

Due to the incomplete status of the Limy Upland 3-7"p.z. reference sheet (R040XC310AZ), rational for DPC objectives is taken from both NRCS Limy Upland 3-7"p.z. (R040XC310AZ) and Limy Upland 7-10"p.z. reference sheets (R040XB210AZ). The reference sheet shows a canopy cover of 20-25%, of which 50% is shrubs, 20% trees and 30% succulents. The ecological site guide shows a density of 50 to 200 plants per acre for creosote bush. Maintaining or exceeding a vegetative canopy cover of 20% and a density of creosote bush on the site of 50 plants per acre can provide cover for wildlife and soil site stability. The reference sheet calls for a bare ground cover class from 10-60%. Maintaining the midpoint or less of the bare ground cover class at 35% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Ward Key Area 3:

Key area 3, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:

This Key Area is located approximately one mile northwest of Saddleback Tank #3 at an elevation of approximately 1,170 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Ward Key Area 4:
Key area 4, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:
This Key Area is located approximately 0.8 miles south of Rattlesnake Well at an elevation of approximately 1,030 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Ward Key Area 5:
Key area 5, Limy Hills 3-7" precipitation zone ecological site

- Maintain a vegetative canopy cover of ≥10%
- Maintain a composition of shrubs ≥40%
- Maintain a composition of trees ≥40%
- Maintain a Bare Ground cover class of ≤5%

Rationale:
This Key Area is located at an elevation of approximately 1,057 feet with a south exposure. This site is 1 mile east of Lost Well (Map 3 and 6).

Due to the incomplete stats of the Limy Hills 3-7"p.z. reference sheet (R040XC308AZ), rational for DPC objectives is taken from both NRCS Limy Hills 3-7"p.z. reference sheet (R040XC308AZ) and Limy Slopes 7-10"p.z reference sheets (R040XB209AZ). The reference sheet for is site shows a canopy cover of 5-10% with vegetation composition consisting of 40-43% shrubs, 40-43% trees, 7-10% forbs, and 7-10% grass. Maintaining or exceeding a composition of shrubs ≥40% and a composition of trees ≥40% on this site can provide diverse cover for wildlife and soil site stability. Maintaining or exceeding a vegetation cover 10% is appropriate for this inherently barren site. Due to the high rock/gravel cover (76%) present on this site, maintaining the bare ground cover class of 5% or less is appropriate to this site and would be expected to prevent accelerated erosion of the site.

Ward Key Area 6:

Key area 6, Sandy Wash 3-7" precipitation zone ecological site

- Maintain a tree composition of ≥10%
- Maintain vegetative canopy cover at ≥60%.
- Maintain a Bare Ground cover class of ≤27%

Rationale:
This Key Area is located approximately one mile south of Chimney Site Well and 1 mile north of Lost Well at an elevation of approximately 1,001 feet (Map 3 and 6). The site was run along the green line of a large ephemeral wash.

Rationale for DPC objectives is taken from the NRCS Sandy Wash 3-7"p.z. reference sheet (R040XC318AZ). The reference sheet shows a foliar cover of 60-70%, of which 10-30% is perennial grass, 40% is shrubs, and 5-10% trees. The steepness of this wash site's banks limits the establishment of shallow rooted plant species and promotes a tree dominated state. The ecological site guide shows a tree composition of 5-10%. Maintaining or exceeding a vegetative canopy cover of 60% and a tree composition of 10% can provide cover for wildlife and erosion control appropriate to this site. The reference sheet shows a bare ground cover class of 15-40%. Maintaining the midpoint or less of the bare ground cover class at 27% is appropriate to this site and would be expected to prevent accelerated erosion of the site.

5.0 Inventory and Monitoring Data

5.1 Rangeland Survey Data

Rangeland Inventory was completed on the Complex between 2013 and 2015. This inventory was completed using the Modified Soil Vegetation Inventory Methodology based on BLM Handbook H-4410-1, "National Range Handbook" and Technical Reference 1734-7, "Ecological Site Inventory".

5.2 Methods

Standard 1 – Upland Health was assessed using an Evaluation Matrix included in the *Interpreting Indicators of Rangeland Health handbook* (BLM Technical Reference 1734-6). The Evaluation Matrix includes five descriptions for each of the 17 indicators which reflects a range of departure from what is expected for the site per the reference sheet, with "none to slight" being the least departure and "extreme to total" being the most.

Standard 3 – Desired Resource Conditions were assessed using ground cover and species composition measurements. Two methods were used to calculate ground cover and species composition. Line intercept/belt density transects were used for upland sites comprised primarily of sparse shrubs such as limy uplands. Pace frequency/dry weight rank (DWR) transects were used for sites with more dense vegetation such as sandy washes and loamy swales. Ground cover describes the proportion of the soil surface covered by some type of protective material, which includes litter, live vegetation, rock, gravel, cryptograms, or bare ground. Ground cover was collected using points along a tape for line intercept/belt density transects and points in a quadrat for pace frequency/DWR transects. Species composition refers to the contribution of each plant species to the vegetation community at the site. Depending on the site, vegetation cover or DWR was used to calculate species composition. For line intercept transects vegetation cover was used

to calculate species composition. Vegetation cover is the percentage of ground obscured by vegetation canopy for each species. For pace frequency transects DWR was used to calculate species composition. For DWR each species within a 40x40 cm frame are given a rank of 1, 2, or 3 corresponding to the amount of the current year's production. These ranks are then converted into composition. Using the following equations cover and DWR are converted to species composition:

$$\text{Species Composition of Species A} = \frac{\text{Species A Total Cover}}{\text{Total Cover for All Species}} \text{ X } 100$$

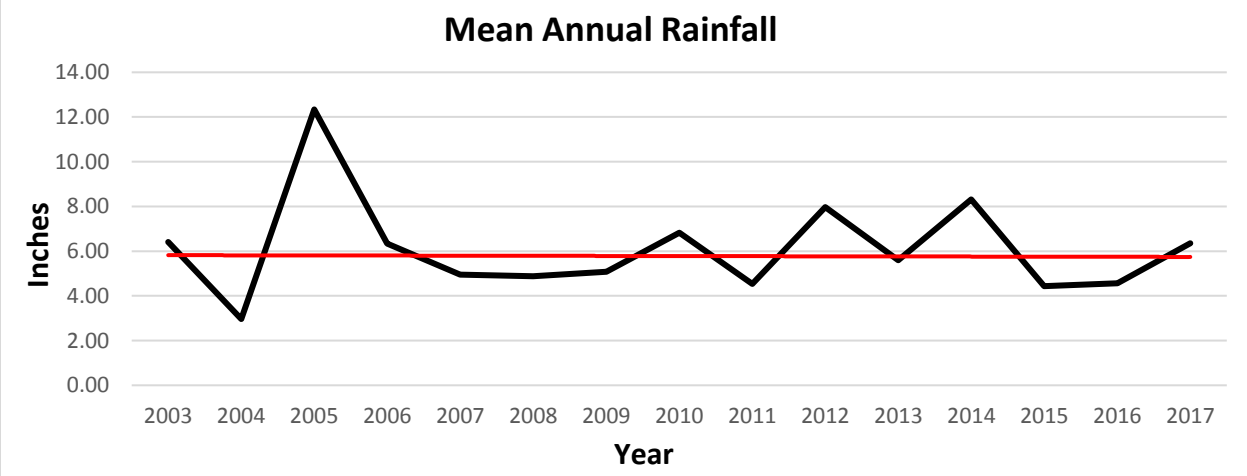
$$\text{Species Composition of Species A} = \frac{\text{Sum of Species A DWR}}{\text{Sum of All Species DWR}} \text{ X } 100$$

For line intercept transects density was also measured by walking along the transect tape while holding an two meter pole and counting any perennial plant rooted within the two meters.

6.0 Management Evaluation and Summary of Studies Data

6.1 Precipitation Data

Figure 1. Mean annual rainfall from Maricopa County Rain Gauges (black line) and 14 year mean annual rainfall (redline).



6.2 Actual Use

Actual Use reporting is not required on any of the allotments in the Complex. Actual Use reports are turned in on a voluntary basis. Where these reports are unavailable, billing was used to calculate actual use.

6.1.1 A Lazy T

Kind	Grazing Begin	Period End	%PL	AUM"s
Cattle	3/1/2017	2/28/2018	100	228
Cattle	3/1/2016	2/28//2017	100	230
Cattle	3/1/2015	2/28/2016	100	108
Cattle	3/1/2014	2/28/2015	100	0
Cattle	3/1/2013	2/28/2014	100	0
Cattle	3/1/2012	2/29/2013	100	0
Cattle	3/1/2011	2/28/2012	100	0
Cattle	3/1/2010	2/28/2011	100	0
Cattle	3/1/2009	2/28/2010	100	0
Cattle	3/1/2008	2/29/2009	100	0
Cattle	3/1/2007	2/28/2008	100	0
Cattle	3/1/2006	2/28/2007	100	0
Cattle	3/1/2005	2/28/2006	100	389

6.1.2 Dendora Valley

Kind	Grazing Begin	Period End	%PL	AUM"s
Cattle	3/1/2017	2/28/2018	95	0
Cattle	3/1/2016	2/28//2017	95	0
Cattle	3/1/2015	2/28/2016	95	0
Cattle	3/1/2014	2/28/2015	95	0
Cattle	3/1/2013	2/28/2014	95	0
Cattle	3/1/2012	2/28/2013	95	0
Cattle	3/1/2011	2/29/2012	95	0
Cattle	3/1/2010	2/28/2011	95	0
Cattle	3/1/2009	2/28/2010	95	0
Cattle	3/1/2008	2/28/2009	95	0
Cattle	3/1/2007	2/29/2008	95	0
Cattle	3/1/2006	2/28/2007	95	0
Cattle	3/1/2005	2/28/2006	95	0

6.1.3 Gable-Ming

Kind	Grazing Begin	Period End	%PL	AUM"s
Cattle	3/1/2017	2/28/2018	100	0
Cattle	3/1/2016	2/28/2017	100	543
Cattle	3/1/2015	2/28/2016	100	109
Cattle	3/1/2014	2/28/2015	100	366

Cattle	3/1/2013	2/28/2014	100	343
Cattle	3/1/2012	2/28/2013	100	413
Cattle	3/1/2011	2/28/2012	100	0
Cattle	3/1/2010	2/28/2011	100	1,444
Cattle	3/1/2009	2/28/2010	100	0
Cattle	3/1/2008	2/28/2009	100	3,021
Cattle	3/1/2007	2/28/2008	100	758
Cattle	3/1/2006	2/28/2007	100	4,508
Cattle	3/1/2005	2/28/2006	100	7,955

6.1.4 Jagow-Kreager

Kind	Grazing Begin	Period End	%PL	AUM"s
Cattle	3/1/2017	2/28/2018	100	0
Cattle	3/1/2016	2/28/2017	100	0
Cattle	3/1/2015	2/28/2016	100	0
Cattle	3/1/2014	2/28/2015	100	306
Cattle	3/1/2013	2/28/2014	100	0
Cattle	3/1/2012	2/28/2013	100	7
Cattle	3/1/2011	2/28/2012	100	17
Cattle	3/1/2010	2/28/2011	100	0
Cattle	3/1/2009	2/28/2010	100	350
Cattle	3/1/2008	2/28/2009	100	358
Cattle	3/1/2007	2/28/2008	100	5
Cattle	3/1/2006	2/28/2007	100	20
Cattle	3/1/2005	2/28/2006	100	5

6.1.5 Layton

Kind	Grazing Begin	Period End	%PL	AUM"s
Cattle	3/1/2017	2/28/2018	100	0
Cattle	3/1/2016	2/28/2017	100	0
Cattle	3/1/2015	2/28/2016	100	0
Cattle	3/1/2014	2/28/2015	100	306
Cattle	3/1/2013	2/28/2014	100	77
Cattle	3/1/2012	2/28/2013	100	11
Cattle	3/1/2011	2/28/2012	100	28
Cattle	3/1/2010	2/28/2011	100	0
Cattle	3/1/2009	2/28/2010	100	0
Cattle	3/1/2008	2/28/2009	100	75

Cattle	3/1/2007	2/28/2008	100	5
Cattle	3/1/2006	2/28/2007	100	0
Cattle	3/1/2005	2/28/2006	100	153

6.1.6 Ward

Kind	Grazing Begin	Period End	%PL	AUM"s
Cattle	3/1/2017	2/28/2018	82	1,150
Cattle	3/1/2016	2/28/2017	82	244
Cattle	3/1/2015	2/28/2016	82	738
Cattle	3/1/2014	2/28/2015	82	1,476
Cattle	3/1/2013	2/28/2014	82	1,476
Cattle	3/1/2012	2/28/2013	82	1,476
Cattle	3/1/2011	2/28/2012	82	1,476
Cattle	3/1/2010	2/28/2011	82	1,476
Cattle	3/1/2009	2/28/2010	82	1,476
Cattle	3/1/2008	2/28/2009	82	2,345
Cattle	3/1/2007	2/28/2008	82	711
Cattle	3/1/2006	2/28/2007	82	1,294
Cattle	3/1/2005	2/28/2006	82	5,199

7.0 Conclusions

7.1 Upland Health Conclusions

Summary of standard achievement or non-achievement for all Key Areas:

Allotment	Key Area	Standard 1	Standard 3
A Lazy T	KA1	ACHIEVED	ACHIEVED
	KA2	NOT ACHIEVED	ACHIEVED
Dendora Valley	KA1	ACHIEVED	ACHIEVED
	KA2	ACHIEVED	ACHIEVED
	KA3	ACHIEVED	ACHIEVED
	KA4	ACHIEVED	ACHIEVED
Gable-Ming	KA1	ACHIEVED	ACHIEVED
	KA2	ACHIEVED	NOT ACHIEVED
	KA4	ACHIEVED	ACHIEVED
	KA5	ACHIEVED	ACHIEVED
	KA6	ACHIEVED	ACHIEVED
	KA7	ACHIEVED	ACHIEVED
	KA8	ACHIEVED	ACHIEVED
	KA9	ACHIEVED	ACHIEVED
Jagow-Kreager	KA1	ACHIEVED	ACHIEVED
	KA2	ACHIEVED	ACHIEVED
	KA3	ACHIEVED	ACHIEVED

	KA4	ACHIEVED	ACHIEVED
Layton	KA1	ACHIEVED	ACHIEVED
	KA2	ACHIEVED	ACHIEVED
	KA3	ACHIEVED	ACHIEVED
	KA4	ACHIEVED	ACHIEVED
Ward	KA1	ACHIEVED	NOT ACHIEVED
	KA2	ACHIEVED	ACHIEVED
	KA3	ACHIEVED	ACHIEVED
	KA4	ACHIEVED	ACHIEVED
	KA5	ACHIEVED	ACHIEVED
	KA6	ACHIEVED	ACHIEVED

Upland Health Conclusions are based on the analysis of the current monitoring data for each key area. The analysis of Standard 3 is based on Dry Weight Rank, Density, Line Intercept, and Point Cover methods. Vegetative canopy cover and bare ground cover results are based on point cover data.

Utilization data and observations of livestock sign and impacts are used to determine if livestock are a potential causal factor for non-achievement of Standards. Based on Holechek (1988), livestock utilization levels in this precipitation zone should be between 30-40% for moderate use without producing deleterious effects to the ecological site. Based on Heffelfinger (2006), browse utilization in this precipitation zone should be limited to 35% to prevent deleterious effects to deer habitat. Observations of livestock sign such as trails, scat, and loitering areas are also taken into account when determining if livestock are the causal factor for non-achievement of Standards.

7.1.1 A Lazy T Allotment

Key Area 1
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity ratings are all categorized as a "None to Slight Departure" from the reference state. Reference Section 2.1.1 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥10% ACHIEVED
- Maintain a composition of perennial grass ≥10% ACHIEVED
- Maintain a cryptogram cover of ≥10% ACHIEVED
- Maintain a bare ground cover of ≤35% ACHIEVED

Rationale:
The vegetative canopy cover objective is met at this key area. The most current long-term monitoring data (2015) shows a vegetative canopy cover of 24%. The perennial grass objective is achieved, with a perennial grass composition of 14%. The cryptogram cover objective is also achieved, with a cryptogram cover of 22%. The bare ground objective is achieved at 24%. This is

a naturally bare key area but there is adequate soil protection from cryptogram and vegetation canopy cover.

Utilization data from 2015 for this key area shows use of big galleta grass at 2.5%. This is expected due to the allotment being authorized for ephemeral use only and the key area's distance from perennial water. Livestock have not been authorized to graze near this key area since 2005.

Key Area 2
Standard 1: Upland Site does Not Achieve Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

This key area has transitioned from a grass dominated state to a tree/shrub dominated state as described in the Loamy Swale 3-7"p.z. ecological site description. Signs of accelerated erosion are evident due to rill, pedestal, and gully formation. Many are stable due to the high tree and shrub presence but deviate from the reference conditions; the indicator rills, gullies, and water-flow patterns deviate moderate to extremely, the indicator pedestals and/or terracettes deviate extreme to totally, and the indicators soil surface resistance to erosion and soil surface loss or degradation deviate slight to moderate. This results in Soil and Site Stability and Hydrologic Function being classified as "Moderate Departure" from the reference state and Biotic Integrity being classified as a "None to Slight Departure" from the transition state. Reference Section 2.1.2 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover at ≥15% ACHIEVED
- Maintain a tree composition of ≥25% ACHIEVED
- Maintain a Bare Ground cover class of ≤23% ACHIEVED

Rationale:

The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 54%. The tree composition objective is achieved, with a tree composition of 71%. The Bare Ground objective is achieved on this key area, with a bare ground cover of 7%.

Utilization data from 2015 for this key area shows a use of mesquite to be 9.2%. Livestock have not been authorized to graze this key area since 2005. However, some unauthorized livestock from the State Lands to the east have been observed in the area. Due to this, current and historical livestock use is likely the causal factor for the non-achievement of Soil Site Stability and Hydrologic Function Objectives of Standard 1.

7.1.2 Dendora Valley

Key Area 1
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, some indicators departed from reference conditions; the indicator plant community

composition and distribution relative to infiltration departed slight to moderately. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.2.1 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:
The tree composition objective is achieved at this key area, trees make up 39% of the key area's vegetation community. Vegetative canopy cover objective is achieved on the key area, with a vegetative canopy cover of 72%. The Bare Ground cover class objective is achieved on the key area, with a bare ground cover class of 18%.

Utilization data from 2015 for this key area shows a use of 2.5% on palo verde species.

Key Area 2
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, some indicators departed from reference conditions; the indicator pedestals and/or terracettes depart moderately because pedestals on site average 4-6" in height and the indicator plant community composition and distribution relative to infiltration departs moderately because the vegetation canopy is not consistent with reference conditions. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.2.2 of Appendix A.

Standard 3: Achieved

- Maintain a perennial grass composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. NOT ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:
The perennial grass composition objective is achieved at this key area. Current long-term monitoring data shows a perennial grass component at 19% of site composition. Vegetative canopy cover objectives were not achieved on the key area, with a vegetative foliar cover of 31%. This may be due to the dynamic nature of this wash system where there are many braided channels which frequently cross the transect line. The Bare Ground cover class objective is achieved on the key area, with a bare ground cover class of 13%.

Utilization data from 2015 for this key area shows a use of big galleta grass to be 4.3% and the use of white ratany to be 2.5%. This is an ephemeral allotment and has not been authorized for

livestock use since 1987. However, feral horses are known to exist in this area and many horse tracks were observed on this site which may be the cause for the additional use on the galleta grass.

Key Area 3
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.2.3 of Appendix A.

Standard 3: Achieved

- Maintain a perennial grass composition of ≥66% NOT ACHIEVED
- Maintain vegetative canopy cover at ≥15%. ACHIEVED
- Maintain a Bare Ground cover class of ≤23% ACHIEVED

Rationale:
The perennial grass composition objective is not achieved at this key area. Current long-term monitoring data shows a perennial grass composition at 40% of vegetation community. This may be due to a portion of the transect occupying the transition zone between the loamy swale and limy upland. The key area is diverse and was burnt at some point in the past. The vegetative canopy cover objective is achieved on the key area, with a vegetative foliar cover of 43%. The Bare Ground cover class objective is achieved on the key area, with a bare ground cover class of 8%.

Utilization data from 2015 for this key area shows a use of big galleta to be 3.5%. This is an ephemeral allotment and has not been authorized for livestock use since 1987. However, feral horses are known to exist in the area and many horse tracks were observed on the key area which may be the cause for the additional use on the galleta grass. Authorized livestock is unlikely to be the cause of the partial non-achievement of Standard 3 due to the lack of authorized use over the past 13 years.

Key Area 4
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, some indicators depart from reference conditions; the indicator litter movement departed moderately due to high litter movement and the indicator litter amount departed slight to moderately due to low litter amount. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.2.4 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥20% NOT ACHIEVED

- Maintain a density of creosote bush ≥50 plants per acre ACHIEVED
- Maintain a Bare Ground cover class of ≤35% ACHIEVED

Rationale:
The vegetative canopy cover objective is not achieved at this key area at 16%. This is likely due to the small size of the creosote bushes on the site. The density objective for creosote bush is achieved with 551 plants per acre. The Bare Ground cover class objective is achieved on the key area, with a bare ground cover class of 0.5%.

There are no palatable species present on this key area.

7.1.3 Gable-Ming

Key Area 1
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state, with the exception of the indicator rills with a slight to moderate departure. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity are all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.3 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:
The tree composition objective is achieved at this key area. Current long-term monitoring data shows a tree composition at 40% of the vegetation community. The vegetative canopy cover objective is achieved on the key area, with a vegetative canopy cover of 65%. The Bare Ground cover class objective is achieved on the key area, with a bare ground cover class of 11%.

Utilization data from 2015 for this key area shows a use of palo verde to be 2.9%. The mild use of palo verde species appears to be due to rabbit use of the leaves and bark.

Key Area 2
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Litter amount was low but still consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.2 of Appendix A.

Standard 3: Not Achieved

- Maintain a vegetative canopy cover of ≥20% NOT ACHIEVED
- Maintain a density of creosote bush ≥300 plants per acre NOT ACHIEVED
- Maintain a density of ratany species ≥20 plants per acre ACHIEVED
- Maintain a Bare Ground cover class of ≤35% ACHIEVED

Rationale:
The vegetative canopy cover objective for this key area is not achieved, with a vegetative canopy cover of 16%. This may be due to the small stature of the creosote bush on the key area. The density of creosote bush objective is also not achieved, with a density of creosote bush of 278 plants per acre. This is likely due to the small drainage that runs through the key area, which limits the potential for creosote bush establishment. The density of ratany species objective is achieved with 27 plants per acre. The bare ground objective is achieved, with a bare ground cover of 8%.

The, 2013, utilization data for this key area shows a use of ratany to be 8.2% and the use of white bursage to be 14.2%. Utilization is below the recommended utilization limit, 35%, of palatable species. It is unlikely that current livestock use is the causal factor for the non-achievement of the vegetative cover and creosote bush density objectives of Standard 3.

Key Area 4
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.3 of Appendix A.

Standard 3: Achieved
- Maintain a vegetative canopy cover of ≥20% NOT ACHIEVED
- Maintain a density of creosote bush ≥50 plants per acre ACHIEVED
- Maintain a Bare Ground cover class of ≤5% ACHIEVED

Rationale:
The vegetative canopy cover objective is not achieved with a cover of 9%. This is likely due to the flat aspect and inherently bare nature of the key area. The density of creosote bush objective is achieved, with a creosote bush density of 240 plants per acre. The bare ground objective is achieved, with a bare ground cover class of 3%.

Utilization data from 2013 for this key area shows a use of ratany to be 13% and white bursage to be 2.5%. It is unlikely that current livestock use is the causal factor for partial non-achievement of for the vegetative canopy cover objectives of Standard 3.

Key Area 5
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, the indicator litter amount departed from reference conditions moderately due to low litter amount. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.4 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:
The tree composition objective is achieved at this key area. Current long-term monitoring data shows a tree composition at 49% of the vegetation community. The vegetative canopy cover objective is achieved on the key area, with a vegetative canopy cover of 77%. The Bare Ground cover class objective is achieved on the key area, with a bare ground cover class of 12%.

Utilization data from 2015 for this key area shows a use of palo verde to be 5.6% and ratany to be 6.4%. This utilization level is within acceptable ranges.

Key Area 6
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

The litter amount on site is low but is consistent with the key area's reference conditions. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.5 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥20% NOT ACHIEVED
- Maintain a density of creosote bush ≥50 plants per acre ACHIEVED
- Maintain a Bare Ground cover class of ≤35% ACHIEVED

Rationale:
The vegetative canopy cover objective is not achieved, with a vegetative canopy cover of 7%. The creosote bush density objective is achieved, with a creosote bush density of 82 plants per acre. The bare ground objective is achieved, with a bare ground cover class of 7%.

The 2013 utilization data for this key area shows the use of ratany at 6.5% and the use of white bursage at 2.5%. It is unlikely that current livestock use on this site is a causal factor for the partial non-achievement of Standard 3 for the vegetative canopy cover class requirement.

Key Area 7
Standard 1: Upland Site Achieves Standard

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, some indicators departed from reference conditions; the indicator plant community composition and distribution relative to infiltration departs moderately due to low canopy cover and the indicator litter amount also departs moderately due to low litter amount. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.6 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥20% — NOT ACHIEVED
- Maintain a density of creosote bush ≥50 plants per acre — ACHIEVED
- Maintain a Bare Ground cover class of ≤35% — ACHIEVED

Rationale:

The vegetative canopy cover objective is not achieved, with a vegetative canopy cover of 9%. This is likely due to the small size of the creosote bushes on the key area. The density of creosote bush objective is achieved, with a creosote bush density of 278 plants per acre. The bare ground objective is achieved, with a bare ground cover class of 15%.

There are no palatable species on this key area. It is unlikely that current livestock use is the causal factor for the partial non-achievement of Standard 3 for the vegetative canopy cover requirement.

Key Area 8

Standard 1: Upland Site Achieves Standard

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.7 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥10% — ACHIEVED
- Maintain a composition of shrubs ≥40% — ACHIEVED
- Maintain a composition of trees ≥40% — NOT ACHIEVED
- Maintain a Bare Ground cover class of ≤5% — ACHIEVED

Rationale:

The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 15%. The shrub composition objective is achieved, with a shrub composition of 45%. The tree composition objective is not achieved, with a tree composition of 32%. This may be due to the partial decadence

of iron wood and palo verde trees. The bare ground objective is achieved, with a bare ground cover class of 3%.

Utilization data from 2015 for this key area shows a use of ratany to be 2.5% and the use of palo verde to be 3.6%. It is unlikely that current livestock use is the causal factor for the partial non-achievement of Standard 3 for the tree composition requirement.

Key Area 9
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and litter amounts are moderately departed from reference conditions. However, all other indicators have none to slight departure from reference conditions. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.3.8 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:

The tree composition objective is achieved, with a tree composition of 35%. The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 71%. The bare ground objective is achieved, with a bare ground cover class of 15%.

Utilization data from 2015 for this key area shows a use of palo verde to be 8.9%.

7.1.4 Jagow-Kreager

Key Area 1
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal despite a slight to moderate departure for the indicator wind-scoured, blowouts, and/or deposition areas. The majority of the indicators are consistent with the key area's reference state. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.4.1 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:
The tree composition objective is achieved, with a tree composition of 24%. The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 64%. The bare ground objective is achieved, with a bare ground cover class of 7%.

Utilization data from 2015 for this key area shows a use of ratany to be 2.5% and the use of palo verde to be 2.5%.

Key Area 2
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal despite a slight to moderate departure for the indicator wind-scoured, blowouts, and/or deposition areas. The majority of the indicators are consistent with the key area's reference state. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.4.1 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:
The tree composition objective is achieved, with a tree composition of 20%. The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 61%. The bare ground objective is also achieved, with a bare ground cover class of 5%.

Utilization data from 2015 for this key area shows a use of ratany to be 6.3% and the use of palo verde to be 3.3%.

Key Area 3
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there is a slight to moderate departure for the gullies and wind-scoured, blowouts, and/or deposition areas indicators. This resulted in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.4.3 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥20% ACHIEVED

- Maintain a density of creosote bush ≥50 plants per acre ACHIEVED
- Maintain a Bare Ground cover class of ≤35% ACHIEVED

Rationale:

The vegetative canopy objective is achived, with a vegetative canopy of 28%. The creosote bush density objective is also achieved, with a creosote bush density of 387 plants per acre. The bare ground objective is achieved, with a bare ground cover class of 8%.

Utilization data from 2015 for this key area shows a use of ratany to be 5.7% and the use of big galleta to be 3.5%.

Key Area 4
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.4.4 of Appendix A.

Standard 3: Achieved
- Maintain a vegetative canopy cover of ≥5% ACHIEVED
- Maintain a composition of shrubs of ≥65% ACHIEVED
- Maintain a composition of trees of ≥1% ACHIEVED
- Maintain a Bare Ground cover class of ≤1% ACHIEVED

Rationale:

The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 8%. The shrub composition objective is achieved, with a shrub composition of 80%. The tree composition objective is achieved, with a tree composition of 16%. The bare ground objective is also achieved, with a bare ground cover class of 0%.

Utilization data from 2015 for this key area shows a use of palo verde to be 2.5%. No other palatable species are present on key area.

7.1.5 Layton
Key Area 1
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there was a slight to moderate departure for the gullies and wind-scoured, blowouts, and/or deposition areas indicators. This resulted in Soil and Site Stability, Hydrologic Function

and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.4.3 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:

The tree composition objective is achieved, with a tree composition of 37%. The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 69%. The bare ground objective is also achieved, with a bare ground cover class of 6%.

Utilization data from 2015 for this key area shows a use of ephedra to be 4.8% and the use of palo verde to be 6.1%.

Key Area 2

Standard 1: Upland Site Achieves Standard

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there was a slight to moderate departure for the indicator plant community composition and distribution relative to infiltration. This resulted in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.5.2 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥20% NOT ACHIEVED
- Maintain a density of creosote bush ≥50 plants per acre ACHIEVED
- Maintain a Bare Ground cover class of ≤5% ACHIEVED

Rationale:

The vegetative canopy cover objective is not achieved, with a vegetative canopy cover of 14%. This is likely due to the small stature of the creosote on the key area. The creosote bush density objective is achieved, with a creosote bush density of 564 plants per acre. The bare ground objective is achieved, with a bare ground cover class of 0%.

Utilization data from 2015 for this key area shows a use of ratany to be 2.5% and palo verde to be 3.1%. It is unlikely that current or historical livestock grazing is the causal factor for the partial non-achievement of Standard 3's vegetative canopy cover objective.

Key Area 3

Standard 1: Upland Site Achieves Standard

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there was a moderate departure for the plant community composition and distribution relative to infiltration indicator due to low canopy cover and functional group deviations. There was also a sight to moderate departure for the litter amount indicator due to low litter amounts. This resulted in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.5.3 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥20% — NOT ACHIEVED
- Maintain a density of creosote bush ≥50 plants per acre — ACHIEVED
- Maintain a Bare Ground cover class of ≤35% — ACHIEVED

Rationale:

The vegetative canopy cover objective is not achieved, with a vegetation canopy cover of 8%. This is likely due to the small stature of the creosote present on the key area. The creosote bush density objective is achieved, with a creosote bush density of 219 plants per acre. The bare ground objective is achieved, with a bare ground cover class of 2%.

There are no palatable species present on the key area. It is unlikely that current livestock grazing is the causal factor for the partial non-achievement of Standard 3 for vegetative canopy cover.

Key Area 4

Standard 1: Upland Site Achieves Standard

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there is a slight to moderate departure for the gullies and plant community composition and distribution relative to infiltration indicators due to small gullies on the key area and disproportionate functional groups in the plant community. There was also a moderate departure for the litter mount indicator due to low litter amounts. This resulted in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.5.4 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% — ACHIEVED
- Maintain vegetative canopy cover at ≥60%. — ACHIEVED
- Maintain a Bare Ground cover class of ≤27% — ACHIEVED

Rationale:

The tree composition objective is achieved, with a tree composition of 17%. The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 61%. The bare ground objective is also achieved, with a bare ground cover class of 12%.

Utilization data from 2015 for this key area shows a use of ratany to be 5.7% and the use of palo verde to be 2.5%.

7.1.6 Ward

Key Area 1

Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there is a moderate to extreme departure for the rills indicator due to there being five rills per acre on the key area. There was a moderate departure for the pedestals and/or terracetts and soil surface loss or degradation indicators due to pedestals averaging 2-3" in height and evidence of soil loss due to rilling. There is a slight to moderate departure for the water flow patterns indicator due to the numerous water flow patterns observed. This may be caused by the abandoned agricultural fields and non-maintained dikes along the road way to the north and east the key area. These findings resulted in Soil and Site Stability and Hydrologic Function being classified as a "Slight to Moderate Departure" and Biotic Integrity being classified as a "None to Slight Departure" from the reference state. Reference Section 2.6.1 of Appendix A.

Standard 3: Not Achieved

- Maintain a vegetative canopy cover at ≥15%. ACHIEVED
- Maintain a tree composition of ≥25% NOT ACHIEVED
- Maintain a Bare Ground cover class of ≤23% NOT ACHIEVED

Rationale:

The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 17%. The tree composition objective is not achieved, with a tree composition of 16%. This may be due to drought or poor site stability preventing the establishment of young trees. The bare ground objective is also not achieved, with a bare ground cover class of 28%. This may be due to the proximity of this key area to Twin Tanks which is where livestock water, are gathered and processed.

Utilization data from 2015 for this key area shows a use of big galleta grass to be 52%. This site is 0.7 miles from a Twin Tanks trough and 1.3 miles from an unfenced reservoir which may be the cause for the high utilization of galleta grass and high level of livestock sign observed on the key area. It is possible that current livestock grazing is the causal factor for the non-achievement of Standard 3 for tree composition and bare ground objectives.

Key Area 2
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there is a slight to moderate departure for the plant community composition and distribution relative to infiltration indicator. This results in Soil and Site Stability, Hydrologic Function and Biotic Integrity all being classified as a "None to Slight Departure" from the reference state. Reference Section 2.6.2 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥20% NOT ACHIEVED
- Maintain a density of creosote bush ≥50 plants per acre ACHIEVED
- Maintain a Bare Ground cover class of ≤35% ACHIEVED

Rationale:

The vegetative canopy cover objective is not achieved, with a vegetative canopy cover of 12%. The creosote bush density objective is achieved, with a creosote bush density of 996 plants per acre. The bare ground objective is also achieved, with a bare ground cover class of 4%.

There are no palatable species present on this key area.

Key Area 3
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.6.3 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:
The tree composition objective is achieved, with a tree composition of 38%. The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 63%. The bare ground objective is also achieved, with a bare ground cover class of 5%.

Utilization data from 2015 for this key area shows a use of ratany to be 2.5% and palo verde to be 2.5%.

Key Area 4
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there is a moderate departure for the plant community composition and distribution relative to infiltration indicator. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.6.4 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% ACHIEVED
- Maintain vegetative canopy cover at ≥60%. ACHIEVED
- Maintain a Bare Ground cover class of ≤27% ACHIEVED

Rationale:

The tree composition objective is achieved, with tree composition of 41%. The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 73%. The bare ground objective is also achieved, with a bare ground cover class of 5.5%.

Utilization data for this key area shows a use of ratany to be 3.2% (2015) and palo verde to be 2.5% (2015).

Key Area 5
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.6.5 of Appendix A.

Standard 3: Achieved

- Maintain a vegetative canopy cover of ≥10% ACHIEVED
- Maintain a composition of shrubs ≥40% ACHIEVED
- Maintain a composition of trees ≥40% NOT ACHIEVED
- Maintain a Bare Ground cover class of ≤5% ACHIEVED

Rationale:

The vegetative canopy cover objective is achieved, with a vegetative canopy cover of 16%. The shrub composition objective is achieved, with a shrub composition of 69%. The tree composition objective is not achieved, with a tree composition of 26%. This is likely because this key area has

transitioned to a more shrub dominated state which is preventing the establishment of new trees. The bare ground objective is achieved, with a bare ground cover class of 2%.

Utilization data for this key area shows a use of ratany to be 2.5% (2015). It is unlikely that current livestock grazing is the causal factor for the partial non-achievement of Standard 3 for tree composition objective.

Key Area 6
Standard 1: Upland Site Achieves Standard
Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).

Signs of accelerated erosion are minimal and are consistent with the key area's reference state. However, there is a slight to moderate departure for the plant community composition and distribution relative to infiltration indicator due to a low vegetative canopy cover. Soil and Site Stability, Hydrologic Function and Biotic Integrity are all classified as a "None to Slight Departure" from the reference state. Reference Section 2.6.6 of Appendix A.

Standard 3: Achieved

- Maintain a tree composition of ≥10% — ACHIEVED
- Maintain vegetative canopy cover at ≥60%. — NOT ACHIEVED
- Maintain a Bare Ground cover class of ≤27% — ACHIEVED

Rationale:

The tree composition objective is achieved on this key area, with a tree composition of 15%. The vegetative canopy cover objective is not achieved on this key area, with a vegetative canopy of 44%. The bare ground objective is achieved on this key area, with a bare ground cover class of 12%.

Utilization data from 2015 for this key area shows a use of palo verde to be 9%. It is unlikely that current livestock grazing on this site is a causal factor for the partial non-achievement of Standard 3 for vegetative canopy cover requirements.

8.0 Recommended Management Actions

8.1 Recommended Management Actions for Uplands in the Complex

Based on the data presented in Section 7 of this document, the majority of the Complex is meeting Standard 1. It is recommended that all allotments within the Complex are issued 10-year grazing permits with the same standard terms and conditions as on the existing permits and ephemeral grazing authorizations continue to be issued in accordance with the guidance set forth in BLM Instruction Memorandum No. AZ-94-018 Ephemeral Grazing Authorizations and the Candidate Conservation Agreement for the Sonoran desert tortoise in Arizona. However, the following recommendations for the areas not meeting either Standard 1 or Standard 3 should be in place prior to the permits being issued.

There are three ecological sites not meeting one or more standards; Standard 1 on the Loamy Swales in the A Lazy T Allotment, Standard 3 on the Limy Uplands Deep in Gable-Ming Allotment, and Standard 3 on the Loamy Swales in the Ward Allotment.

A broad Loamy Swale braided with Sandy Washes within the A Lazy T Allotment make up Centennial Wash. This wash traverses a perennial State Land grazing lease and an ephemeral BLM grazing permit. Livestock have been observed traversing Centennial Wash from State to BLM land. A fence separating the BLM from the State portion of this allotment is recommended to prevent continued livestock trespass on the ephemeral portion of the A Lazy T Allotment and would assist with the Loamy Swale ecological site's progression towards the achievement of Standard 1's Soil and Site Stability Objective. This would require approximately 4.8 miles of fence to completely enclose the BLM lands within the Allotment.

The Loamy Swales on the Ward Allotment are failing to achieve Standard 3's tree composition and bare ground objectives. Proximity to livestock water, 0.7 miles, has potentially prevented the recruitment of additional trees and potentially created excessive bare ground on this site. The nearest livestock water is Twin Tanks which is a large livestock processing facility on private land to the north of the key area representing Loamy Swales on the Ward Allotment. The entire cow/calf heard is gathered there once a year to wean and process calves. Once the calves are weaned, the cows and heifers often linger in the area before voluntarily moving on or being pushed to new waters. It is recommended that following weaning, the remaining cows and heifers are quickly moved from the area and distributed across the allotment to prevent cattle from loitering in the loamy swales south of Twin Tanks. Limiting loitering in this area would increase vegetation cover and reduce bare ground.

It is unlikely that current livestock grazing is the causal factor for the non-achievement of Limy Uplands Deep on the Gable-Ming Allotment. The vegetation canopy cover is 4% less than DPC objectives and the creosote bush density is 22 plants per acre less than DPC objectives. Livestock sign was not observed on this site. The effects of drought may be a causal factor for the non-achievement of these objectives. To prevent further degradation, frequent monitoring for unauthorized off-road use and livestock is recommended for this area.

To facilitate orderly management of the range, Actual Use reporting should be added to the terms and conditions of the permit. Some permittees have voluntarily submitted Actual Use for several years, however, adding the reporting requirement will ensure appropriate use levels have been maintained during drought years, and will facilitate desired stocking rate calculations in years that utilization data is collected.

Comment/Issue	BLM Response
Issue 1 – Upland vegetation: How would continued livestock grazing affect the levels of annual plant species given the BLM's current monitoring methods?	Addressed in LHE and EA
Issue 2 – Soils: How can the BLM attribute a site's land health failures to livestock if no palatable species are present?	Addressed in LHE
Issue 3 – Wildlife: What impacts would the permitted level of livestock grazing have on Sonoran Desert Tortoise and Bighorn Sheep in terms of forage competition and social avoidance?	Addressed in LHE and EA
Issue 4 – How was the Gable-Ming authorized more than 4200 AUMs if it is a perennial only allotment?	Due to an administrative error, the Gable-Ming Allotment was classified as "perennial only" in the Draft Gable Complex LHE. This has been corrected to show the current terms and conditions of the existing permit as "perennial/ephemeral" in the final LHE and EA.

9.0 List of Preparers

Name	Title
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Appendix A to the Gable Complex LHE
Data Appendices

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1.0 Key Area Data

1.1 A Lazy T Allotment

1.1.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for the indicator wind-scoured, blowouts, and/or deposition areas.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a slight to moderate departure for the indicator litter amount.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a slight to moderate departure for the indicator litter amount.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Canopy	Litter	Gravel/Stone	Cryptograms
2015	24%	24%	8%	22%	22%

Line Intercept and Density Data:

Plant Species KA1 2015	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Larrea Tridentata	LATR2	20.63	85	250
Krameria erecta	KRER			5
Cylindropuntia leptocaulis	CYLE8			5
Total		20.63	85	260
Grasses-Perennial				
Pleuraphis rigida	PLRI3	3.41	14	82
Total		3.41	14	82
Forbs- Perennial/Biennial				
Ditaxis sp.	DITAX	0.09	T	71
Sphaeralcea ambigua	SPAM2	0.2	1	22
Total		0.29	1	93

Utilization Data:

KA1 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Pleuraphis rigida	PLRI3	2.5

1.1.2 Key Area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	Moderate Departure. The indicator pedestals departed extreme to total. The indicators rills, water-flow patterns and gullies all departed moderate to extremely. The indicators soils surface resistance to erosion and soil surface loss or degradation both departed slight to moderate.
Hydrologic Function (H):	Moderate Departure. The indicator pedestals departed extreme to total. The indicators rills, water-flow patterns and gullies all departed moderate to extremely. The indicators soils surface resistance to erosion and soil surface loss or degradation both departed slight to moderate.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of the indicator functional/structural groups which departed moderately and the indicators soils surface resistance to erosion and soil surface loss or degradation which both departed slight to moderate from reference conditions.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	7%	54%	36%	0%	3%

Frequency and Composition Data:

Plant Species KA2 2015	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Prosopis velutina	PRVE	49	71
Ziziphus obtusifolia	ZIOB	2	3
Acacia greggii	ACGR	6	6
Larrea tridentata	LATR2	12	16
Lycium sp.	LYCIU	2	2
Total		36	98
Forbs- Perennial/Biennial			
Cynodon dactylon	CYDA	2	2
Sphaeralcea ambigua	SPAM2	1	T
Annual Grass	AAGG	85	
Annual Forb	AAFF	63	
Total		75	2

Utilization Data:

KA2 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Prosopis velutina	PRVE	9.2

1.2 Dendora Valley

1.2.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a Slight to Moderate departure for the indicator Plant community composition and distribution relative to infiltration.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a Slight to Moderate departure for the indicator Plant community composition and distribution relative to infiltration.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	18%	72%	5%	3%	2%

Frequency and Composition Data:

Plant Species KA1 2015	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Lycium sp.	LYCIU	20	16
Bebia juncia	BEJU	26	14
Acacia greggii	ACGR	20	16
Larrea tridentata	LATR2	2	1
Parkinsonia microphylla	PAMI5	10	8
Parkinsonia florida	PAFL6	17	18
Ambrosia ambrosioides	AMAM2	20	11
Condalia warnockii	COWA	1	T
Olneya tesota	OLTE	16	13
Total		132	97
Forbs- Perennial/Biennial			
Clematis drummondii	CLDR	1	T
Nicotiana obtusifolia	NIOB	8	1
Ditaxis sp.	DITAXIS	2	1
Annual Forb	AAFF	6	
Total		17	2

Utilization Data:

KA1 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAFL6	2.5

1.2.2 Key Area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for pedestals reaching 4-6".
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are mostly consistent with the expected conditions on the site. With the exception of a slight to moderate departure for pedestals reaching 4-6" and a moderate departure for the plant community composition and distribution relative to infiltration indicator.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	13%	31%	56%	0%	0%

Frequency and Composition Data:

Plant Species KA2 2015	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Lycium sp.	LYAN	47	40
Larrea tridentata	LATR2	5	4
Parkinsonia microphylla	PAMI5	20	9
Parkinsonia florida	PAFL6	6	5
Prosopis velutina	PRVE	22	14
Ambrosia ambrosioides	AMAM2	8	3
Ambrosia deltoidea	AMDE4	1	T
Total		109	75
Perennial Grasses			
Pleuraphis rigida	PLRI3	16	18
Aristida sp.	ARIST	1	1
Total		17	19
Forbs- Perennial/Biennial			
Clematis drummondii	CLDR	6	T
Cynodon dactylon	CYDA	4	2
Sphaeralcea ambigua	SPAM2	2	T
Unknown forb	Forb	7	3

Total		19	5

Utilization Data:

KA2 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Pleuraphis rigida	PLRI3	4.3
Krameria grayi	KRGR	2.5

1.2.3 Key Area 3

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Cryptograms
2015	8%	43%	46%	3%	1%

Frequency and Composition Data:

Plant Species KA3 2015	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Lycium sp.	LYCIU	2	1
Larrea tridentata	LATR2	9	10
Acacia greggii	ACGR	5	2
Parkinsonia microphylla	PAMI5	3	3
Ambrosia deltoidea	AMDE4	15	13
Cylindropuntia leptocaulis	CYLE8	2	T
Total		36	29
Perennial Grasses			
Pleuraphis rigida	PLRI3	37	40
Muhlenbergia porter	MUPO2	1	T
Total		38	40
Forbs- Perennial/Biennial			
Cynodon dactylon	CYDA	15	16
Ditaxis sp.	DITAXIS	3	2
Sphaeralcea sp	SPHAE	13	12
Euphorbia exstipulata	EUEX4	1	T

Unknown Gourd	UNKN	1	T
Annual Forb	AAFF	53	
Annual Grass	AAGG	52	
Total		138	30

Utilization Data:

KA3 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
PLRI3	PLRI3	3.5

1.2.4 Key Area 4

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a moderate departure for the litter movement indicator.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a slight to moderate departure for the indicator litter amount.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a slight to moderate departure for the indicator litter amount.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Cryptograms
2015	0.5%	16%	7%	76%	0%

Line Intercept and Density Data:

Plant Species KA4 2015	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Larrea tridentata	LATR2	11	100	551
Parkinsonia microphylla	PAMI5			
Cylindropuntia acanthocarpa	CYAC8			7
Ambrosia deltoidea	AMDE4			14
Carnegiea gigantea	CAGI10			
Total		11	100	572
Forbs- Perennial/Biennial				
Unknown Forb	UNKN			
Total				

Utilization Data:

KA4 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**

No palatable species		

1.3 Gable-Ming

1.3.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for the indicator rills.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a slight to moderate departure for the indicator rills.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Cryptograms
2013	11%	65%	8%	16%	0%

Frequency and Composition Data:

Plant Species KA1 2013	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Parkinsonia florida	PAFL6	30	34
Acacia greggii	ACGR	26	27
Larrea tridentata	LATR2	11	10
Ziziphus obtusifolia	ZIOB	2	T
Lycium sp.	LYCIU	1	T
Ambrosia deltoidea	AMDE4	2	T
Prosopis velutina	PRVE	15	6
Total		87	77
Forbs- Perennial/Biennial			
Nicotiana obtusifolia	NIOB	25	10
Clematis drummondii	CLDR	7	3
Funastrum cynanchoides	FUCYC	1	T
Datura wrightii	DAWR2	4	2
Stephanomeria pauciflora	STPA4	1	T
Annual Grass	AAGG	1	
Annual Forb	AAFF	42	
Total		81	15

Utilization Data:

KA1 Utilization, 2014		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia florida	PAFL6	2.9

1.3.2 Key area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Cryptograms	Rock
2013	8%	16%	8%	61%	0%	6%

Line Intercept and Density Data:

Plant Species KA2 2013	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Larrea tridentata	LATR2	15	92	278
Cylindropuntia versicolor	CYVE3	1	5	60
Fouquieria splendens	FOSP2	T	2	5
Krameria erecta	KRER	T	1	27
Ambrosia dumosa	AMDU2			38
Encelia farinosa	ENFA			5
Total		16	100	413
Forbs- Perennial/Biennial				
Ditaxis sp.	DITAXIS	1	T	11
Euphorbia sp.	EUPHO			44
Total		1		55

Utilization Data:

KA2 Utilization, 2013		
SPECIES	**SYMBOL**	**% USE**
Krameria erecta	KRER	8.2
Ambrosia dumosa	AMDU2	14.2

1.3.3 Key Area 4

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Rock	Cryptograms
2013	3%	9%	6%	81%	1%

Line Intercept and Density Data:

Plant Species KA4 2013	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Larrea tridentata	LATR2	9.3	84	240
Ambrosia dumosa	AMDU2	0.5	6	93
Ambrosia deltoidea	AMDE4	0.2	1	22
Olneya tesota	OLTE	1	9	5
Parkinsonia microphylla	PAMI5			5
Echinocereus engelmannii	ECEN			5
Krameria erecta	KRER			5
Total		11	100	375

Utilization Data:

KA4 Utilization, 2013		
SPECIES	**SYMBOL**	**% USE**
Krameria erecta	KRER	13
Ambrosia dumosa	AMDU2	2.5

1.3.4 Key Area 5

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. With the exception of a moderate departure for the indicator litter amount.
Biotic Integrity (B):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with the expected conditions on the site. . With the exception of a moderate departure for the indicator litter amount.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Rock	Cryptograms
2013	12%	77%	1%	10%	0%

Frequency and Composition Data:

Plant Species KA5 2013	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Parkinsonia florida	PAFL6	43	41
Acacia greggii	ACGR	25	20
Larrea tridentata	LATR2	1	T
Bebbia juncea	BEJU	9	6
Lycium sp.	LYCIU	9	9
Ambrosia ambrosioides	AMAM2	9	6
Prosopis velutina	PRVE	8	7
Condalia warnockii	COWA	1	1
Parkinsonia microphylla	PAMI5	1	1
Hyptis emoryi	HYEM	1	2
Encelia farinosa	ENFA	2	T
Total		109	93
Forbs- Perennial/Biennial			
Nicotiana obtusifolia	NIOB	8	1
Unknown Vine	UNKN	1	T
Unknown Aster	UNKN	2	
Euphorbia sp.	EUPHO	10	
Sphaeralcea ambigua	SPAM2	10	1
Physalis crassifolia	PHCR4	1	1
Ditaxis sp.	DITAXIS	19	4
Total		51	7

Utilization Data:

KA5 Utilization, 2013		
SPECIES	**SYMBOL**	**% USE**
Lycium sp.	LYCIU	2.5
Sphaeralcea ambigua	SPAM2	5.5

1.3.5 Key Area 6

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the indicator litter amount.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the indicator litter amount.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Cryptograms	Rock
2013	7%	7%	4%	73%	1%	8%

Line Intercept and Density Data:

Plant Species KA6 2013	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Larrea tridentata	LATR2	3.8	41	82
Parkinsonia microphylla	PAMI5	2.4	25	30
Ambrosia deltoidea	AMDE4	1.9	21	120
Cylindropuntia bigelovii	CYBI9	0.1	T	5
Cylindropuntia versicolor	CYVE3	0.5	5	33
Krameria erecta	KRER	0.2	T	38
Ambrosia dumosa	AMDU2	0.2	2	11
Encelia farinosa	ENFA			5
Total		9.1	94	324
Perennial Grasses				
Pleuraphis rigida	PLRI3	0.2	2	5
Total		0.2	2	5
Forbs- Perennial/Biennial				
Eriogonum inflatum	ERIN4	0.1	T	27
Euphorbia sp.	EUPHO			33
Trixis californica	TRICA8			5
Total		0.1	T	65

Utilization Data:

KA6 Utilization, 2013		
SPECIES	**SYMBOL**	**% USE**
Krameria erecta	KRER	6.5
Ambrosia dumosa	AMDU2	2.5

1.3.6 Key Area 7

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the indicators plant community composition and distribution relative to infiltration and litter amount.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the indicator litter amount.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Cryptograms	Rock
2013	15%	9%	5%	54%	5%	13%

Line Intercept and Density Data:

Plant Species KA7 2013	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Larrea tridentata	LATR2	8.8	94	278
Fouquieria splendens	FOSP2	0.6	3	
Ambrosia deltoidea	AMDE4			22
Cylindropuntia bigelovii	CYBI9			38
Cylindropuntia versicolor	CYVE3			16
Larrea tridentata (young)	LATR2			5
Total		9.4	97	359

Utilization Data:

KA7 Utilization, 2013		
SPECIES	**SYMBOL**	**% USE**
Ambrosia deltoidea	AMDE4	2.5

1.3.7 Key Area 8

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Cryptograms	Rock
2013	3%	15%	5%	70%	1%	7%

Line Intercept and Density Data:

Plant Species KA8 2013	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Lycium sp.	LYCIU	1	5	11
Krameria erecta	KRER	1	5	22
Olneya tesota	OLTE	1	9	16
Larrea tridentata	LATR2	5	35	142
Carnegiea gigantean	CAGI10	T	1	11
Celtis sp.	CELTI	T	3	6
Ambrosia dumosa	AMDU2			6
Parkinsonia microphylla	PAMI5	3	23	33
Total		11	81	247
Perennial Grasses				
Aristida sp.	ARIST			11
Total				11
Forbs- Perennial/Biennial				
Eriogonum inflatum	ERIN4	3	19	861
Euphorbia sp.	EUPHO			807
Ditaxis sp.	DITAXIS			11
Unknown Aster	UNKN			6
Unknown Forb	UNKN			6
Marina parryi	MAPA7			16
Total		3	19	1707

Utilization Data:

KA8 Utilization, 2013		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAMI5	3.6
Krameria erecta	KRER	2.5

1.3.8 Key Area 9

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.

Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the indicator litter amount.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the indicator litter amount.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Rock	Cryptograms
2013	15%	71%	1%	13%	0%

Frequency and Composition Data:

Plant Species KA9 2013	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Parkinsonia florida	PAFL6	15	13
Parkinsonia microphylla	PAMI5	5	5
Acacia greggii	ACGR	15	16
Larrea tridentata	LATR2	2	2
Bebbia juncea	BEJU	2	3
Lycium sp.	LYCIU	6	5
Ambrosia ambrosioides	AMAM2	29	14
Prosopis velutina	PRVE	16	17
Hymenoclea salsola	HYSA	9	8
Encelia farinosa	ENFA	1	T
Olneya tesota	OLTE		
Total		100	83
Forbs- Perennial/Biennial			
Psilostrophe cooperi	PSCO2	7	8
Brassica tournefortii	BUTO	2	T
Datura wrightii	DAWR2	1	T
Annual Forb	AAFF	9	
Total		19	8

Utilization Data:

KA9 Utilization, 2013		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia florida	PAFL6	8.9

1.4 Jagow-Kreager

1.4.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:

Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for the indicator wind-scoured, blowouts, and/or deposition areas.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	7%	64%	15%	10%	4%

Frequency and Composition Data:

Plant Species KA1 2015	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Parkinsonia microphylla	PAMI5	9	12
Acacia greggii	ACGR	27	23
Larrea tridentata	LATR2	22	22
Ziziphus obtusifolia	ZIOB	1	1
Lycium sp.	LYCIU	5	2
Hyptis emoryi	HYEM	5	4
Encelia farinosa	ENFA	1	T
Olneya tesota	OLTE	3	4
Ambrosia ambrosioides	AMAM2	14	13
Krameria grayi	KRGR	1	1
Prosopis velutina	PRVE	9	8
Trixis sp	TRIXI	3	2
Total		100	92
Forbs- Perennial/Biennial			
Nicotiana obtusifolia	NIOB	25	10
Acourtia sp	ACUOR	7	3
Funastrum cynanchoides	FUCYC	1	T
Euphorbia sp	EUPHO	4	2
Ditaxis sp	DITAXIS	1	T
Annual grass	AAGG	1	
Annual Forb	AAFF	42	
Annual Vine	AAVV	5	
Total		86	15

Utilization Data:

KA1 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAMI5	2.5
Krameria grayi	KRGR	2.3

1.4.2 Key Area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for the indicator wind-scoured, blowouts, and/or deposition areas.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	5%	61%	22%	5%	7%

Frequency and Composition Data:

Plant Species KA2 2015	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Parkinsonia microphylla	PAMI5	21	17
Acacia greggii	ACGR	12	11
Larrea tridentata	LATR2	13	11
Ziziphus obtusifolia	ZIOB	6	4
Lycium sp.	LYCIU	48	37
Hyptis emoryi	HYEM	2	T
Olneya tesota	OLTE	2	2
Ambrosia ambrosioides	AMAM2	11	9
Krameria grayi	KRGR	2	2
Prosopis velutina	PRVE	1	T
Trixis sp	TRIXI	1	T
Ambrosia deltoidea	AMDE4	6	4
Bebbia juncea	BEJU	1	T
Total		126	97
Forbs- Perennial/Biennial			
Nicotiana obtusifolia	NIOB	1	T
Orobanche sp	OROBA	1	

Ditaxis sp	DITAXIS	1	1
Sphaeralcea sp.	SPHAE	2	1
Annual grass	AAGG	35	
Annual Forb	AAFF	59	
Annual Vine	AAVV	7	
Total		106	2

Utilization Data:

KA2 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAMI5	3.3
Krameria grayi	KRGR	6.3

1.4.3 Key Area 3

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for the gullies, wind-scoured, blowouts, and/or deposition areas indicators.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the gullies, wind-scoured, blowouts, and/or deposition areas indicators.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	8%	28%	9%	43%	12%

Line Intercept and Density Data:

Plant Species KA3 2015	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Krameria erecta	KRER	5	3	27
Larrea tridentata	LATR2	11	71	387
Krameria grayi	KRGR			
Cylindropuntia acanthocarpa	CYACA2	T	1	40
Ambrosia deltoidea	AMDE4	4	21	213
Cylindropuntia leptocaulis	CYLE8			7
Total		20	96	674
Perennial Grasses				
Pleuraphis rigida	PLRI3			7

Total				7
Forbs- Perennial/Biennial				
Sphaeralcea ambigua	SPAM2			7
Total				7

Utilization Data:

KA3 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Krameria grayi	KRGR	5.7
Pleuraphis rigida	PLRI3	3.5

1.4.4 Key Area 4

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	0%	8%	6%	83%	3%

Line Intercept and Density Data:

Plant Species KA4 2015	Symbol	Cover (%)	Composition (%)	Density (Plants/Acre)
Tree and Shrub Species				
Parkinsonia microphylla	PAMI5	1	16	7
Fouquieria splendens	FOSP2	T	T	7
Eriogonum	ERIOG			7
Encelia farinosa	ENFA	T	T	20
Larrea tridentata	LATR2	6	79	352
Ferocactus wislizeni	FEWI			14
Cylindropuntia acanthocarpa	CYACA2	T	4	7
Ambrosia deltoidea	AMDE4			27
Carnegiea gigantea	CAGI10			7
Total		7	99	448
Forbs- Perennial/Biennial				
Annual Grass – *Bouteloua barbata*	BOBA2	T	T	7
Total				7

Utilization Data:

KA4 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAMI5	2.5

1.5 Layton

1.5.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for the gullies, wind-scoured, blowouts, and/or deposition areas indicators.
Hydrologic Function (H):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a slight to moderate departure for the gullies, wind-scoured, blowouts, and/or deposition areas indicators.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	6%	69%	18%	3%	3%

Frequency and Composition Data:

Plant Species KA1 2015	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Parkinsonia microphylla	PAMI5	19	14
Acacia greggii	ACGR	13	11
Larrea tridentata	LATR2	42	29
Ziziphus obtusifolia	ZIOB	2	1
Lycium sp.	LYCIU	15	7
Ephedra sp.	EPHED	2	2
Olneya tesota	OLTE	4	3
Ambrosia deltoidea	AMDE4	29	23
Krameria grayi	KRGR	1	1
Prosopis velutina	PRVE	5	5
Trixis sp.	TRIXI	2	T
Total		134	96
Forbs- Perennial/Biennial			
Sphaerelcea sp	SPHAE	5	3

Orobanche sp	OROBA	1	T
Euphorbia sp	EUPHO	4	
Ditaxis sp	DITAXIS	1	T
Annual grass	AAGG	47	
Annual Forb	AAFF	52	
Total		110	3

Utilization Data:

KA1 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAMI5	6.1
Ephedra sp.	EPHED	4.8

1.5.2 Key Area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the plant community composition and distribution relative to infiltration indicator.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	0%	14%	8%	74%	4%

Line Intercept and Density Data:

Plant Species KA2 2015	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Parkinsonia microphylla	PAMI5	1	5	7
Olneya tesota	OLTE			
Ephedra sp.	EPHED	T	3	21
Larrea tridentata	LATR2	12	92	564
Cylindropuntia acanthocarpa	CYACA2			
Total		11	100	592

Utilization Data:

KA2 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**

Parkinsonia microphylla	PAMI5	3.1
Krameria grayi	KRGR	2.5

1.5.3 Key Area 3

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the plant community composition and distribution relative to infiltration indicator and a slight to moderate departure for the litter amount indicator.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the litter amount indicator.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	2%	8%	4%	76%	10%

Line Intercept and Density Data:

Plant Species KA3 2015	**Symbol**	**Cover (%)**	**Composition (%)**	**Density (Plants/Acre)**
Tree and Shrub Species				
Parkinsonia microphylla	PAMI5			
Olneya tesota	OLTE			
Ephedra sp.	EPHED			
Larrea tridentata	LATR2	4	100	219
Cylindropuntia acanthocarpa	CYACA2			
Total		4	100	219

Utilization Data:

KA3 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
No palatable species		

1.5.4 Key Area 4

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the gullies indicator.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the gullies and plant community composition and distribution relative to infiltration indicators and a moderate departure for the litter amount indicator.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the litter amount indicator.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	12%	61%	15%	12%	0%

Frequency and Composition Data:

Plant Species KA4 2015	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Parkinsonia florida	PAFL6	36	27
Acacia greggii	ACGR	26	22
Larrea tridentata	LATR2	17	9
Bebbia juncea	BEJU	20	14
Lycium sp.	LYCIU	4	2
Celtis palida	CEPA8	2	2
Ambrosia deltoidea	AMDE4	2	T
Trixis californica	TRCA	2	T
Total		109	76
Forbs- Perennial/Biennial			
Sphaeralcea sp.	SPHAE	24	15
Stephanomeria pauciflora	STPA4	6	4
Euphorbia sp.	EUPHO	4	T
Asclepias sp.	ASCLE	12	3
Annual grass	AAGG	23	
Annual Forb	AAFF	21	
Total		90	19

Utilization Data:

KA4 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia florida	PAFL6	2.5

Krameria grayi	KRGR	5.7

1.6 Ward

1.6.1 Key Area 1

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	Slight to Moderate Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site. With the exception of a moderate to extreme departure for the rills indicator, a moderate departure for the pedestals and/or terracetts and soil surface loss or degradation indicators, and a slight to moderate departure for the water flow patterns indicator.
Hydrologic Function (H):	Slight to Moderate Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate to extreme departure for the rills indicator, a moderate departure for the pedestals and/or terracetts and soil surface loss or degradation indicators, and a slight to moderate departure for the water flow patterns indicator.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the soil surface loss or degradation indicator.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	28%	17%	50%	5%	0%

Frequency and Composition Data:

Plant Species KA1 2015	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Parkinsonia microphylla	PAMI5	31	13
Acacia greggii	ACGR	11	4
Larrea tridentata	LATR2	62	23
Parkinsonia florida	PAFL6	4	1
Castela emoryi	CAEM4	9	2
Ambrosia deltoidea	AMDE4	74	25
Lycium andersonii	LYAN	5	1
Prosopis velutina	PRVE	7	2
Total		198	70
Perennial Grasses			
Pleuraphis rigida	PLRI3	6	T
Total		6	T
Forbs- Perennial/Biennial			
Machaeranthera pinnatifida	MAPIP4	93	15
Unknown Forb	FORB	77	8

Total		110	3

Utilization Data:

KA1 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Pleuraphis rigida	PLRI3	52

1.6.2 Key Area 2

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the plant community composition and distribution relative to infiltration indicator.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	4%	12%	12%	66%	6%

Line Intercept and Density Data:

Plant Species KA2 2015	Symbol	Cover (%)	Composition (%)	Density (Plants/Acre)
Tree and Shrub Species				
Larrea tridentata	LATR2	12	100	996
Total		12	100	592

Utilization Data:

KA2 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
No Palatable Species		

1.6.3 Key Area 3

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Stone	Cryptograms
2015	5%	63%	8%	14%	10%	0%

Frequency and Composition Data:

Plant Species KA3 2015	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Parkinsonia microphylla	PAMI5	20	18
Larrea tridentata	LATR2	15	6
Ambrosia deltoidea	AMDE4	8	8
Acacia greggii	ACGR	9	6
Encelia farinosa	ENFA	12	6
Trixis californica	TRCA	1	T
Ambrosia ambrosioides	AMAM2	3	1
Olneya tesota	OLTE	22	20
Lycium andersonii	LYAN	26	19
Bebia juncia	BEJU	8	7
Total		124	91
Forbs- Perennial/Biennial			
Eriogonum sp.	ERIOG	5	4
Stephanomeria pauciflora	STPA4	2	2
Sphaeralcea sp.	SPHAE	2	T
Ditaxis sp.	DITAXIS	3	3
Mirabilis multiflora	MIMU	1	T
Euphorbia sp.	EUPHO	10	
Pectis sp.	PECTIS	4	
Total		11	9

Utilization Data:

KA3 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Krameria grayi	KRGR	2.5
Parkinsonia microphylla	PAMI5	2.5

1.6.4 Key Area 4

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a moderate departure for the plant community composition and distribution relative to infiltration indicator.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel	Stone	Cryptograms
2015	5%	73%	6%	8%	1%	7%

Frequency and Composition Data:

Plant Species KA4 2015	Symbol	Frequency (%)	Composition (%)
Tree and Shrub Species			
Parkinsonia microphylla	PAMI5	25	21
Parkinsonia florida	PAFL4	2	2
Acacia greggii	ACGR	10	8
Larrea tridentata	LATR2	28	14
Ambrosia deltoidea	AMDE4	13	9
Prosopis velutina	PRVE	6	1
Olneya tesota	OLTE	17	17
Krameria grayi	KRGR	1	1
Lycium sp.	LYCIU	17	21
Ambrosia dumosa	AMDU2	1	1
Ziziphus obtusifolia	ZIOB	3	3
Total		123	98
Forbs- Perennial/Biennial			
Sphaeralcea ambigua	SPAM2	2	2
Ditaxis sp.	DITAXIS	1	T
Annual Grass	AAGG	2	
Annual Forb	AAFF	1	

Total		6	2

Utilization Data:

KA4 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAMI5	2.5
Krameria grayi	KRGR	3.2

1.6.5 Key Area 5

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	2%	8%	4%	76%	10%

Line Intercept and Density Data:

Plant Species KA5 2015	Symbol	Cover (%)	Composition (%)	Density (Plants/Acre)
Tree and Shrub Species				
Parkinsonia microphylla	PAMI5	3	19	20
Olneya tesota	OLTE	1	7	7
Krameria grayi	KRGR	T	4	86
Larrea tridentata	LATR2	8	55	200
Cylindropuntia leptocaulis	CYLE8	1	6	86
Ambrosia deltoidea	AMDE4	T	3	40
Lycium fremontii	LYFR	T	T	13
Lycium andersonii	LYAN	T	2	
Eriogonum inflatum	ERIN4	T	T	27
Unknown shrub	UNKN	1	4	40
Total		14	100	519

Utilization Data:

KA5 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**

Krameria grayi	KRGR	2.5

1.6.6 Key Area 6

Interpreting Indicators of Rangeland Health:

Attribute Rating:	Rationale:
Soil and Site Stability (S):	None to Slight Departure. The indicators observed, when compared to the reference state, are consistent with expected conditions on the site.
Hydrologic Function (H):	None to Slight Departure. Most indicators are within the tolerances given in the reference state. With the exception of a slight to moderate departure for the plant community composition and distribution relative to infiltration indicator.
Biotic Integrity (B):	None to Slight Departure. Most indicators are within the tolerances given in the reference state.

Codes: N-S (None to Slight) S-M (Slight to Moderate) M (Moderate) M-E (Moderate to Extreme) E-T (Extreme to Total)

Ground Cover Data:

Year	Bare Ground	Veg. Cover	Litter	Gravel/Stone	Cryptograms
2015	12%	44%	34%	9%	1%

Frequency and Composition Data:

Plant Species KA6 2015	**Symbol**	**Frequency (%)**	**Composition (%)**
Tree and Shrub Species			
Acacia greggii	ACGR	29	34
Larrea tridentata	LATR2	21	18
Ambrosia deltoidea	AMDE4	12	4
Parkinsonia florida	PAFL6	15	15
Bebbia juncea	BEJU	3	3
Funastrum cynanchoides	FUCY	10	6
Ziziphus obtusifolia	ZIOB	1	1
Unknown Shrub	UNKN	5	3
Lycium sp.	LYCU	19	15
Total		115	99
Forbs- Perennial/Biennial			
Euphorbia sp.	EUPHO	7	
Ditaxis sp.	DITAXIS	1	1
Annual Grass	AAGG	27	
Annual Forb	AAFF	3	
Total		38	1

Utilization Data:

KA6 Utilization, 2015		
SPECIES	**SYMBOL**	**% USE**
Parkinsonia microphylla	PAMI5	8.8

2.0 Gable Complex Plant List

The following plant list comprises all the plant species identified on long-term monitoring transects. This list is not exhaustive nor all inclusive of the plants on the Complex. Plant species on the list are identified by common name, scientific name, and NRCS Plants Database symbol.

Symbol	Scientific Name	Common Name
Shrubs		
AMAM2	*Ambrosia ambrosioides*	canyon ragweed
AMDE4	*Ambrosia deltoidea*	triangle leaf bursage
AMDU2	*Ambrosia dumosa*	white bursage
BEJU	*Bebbia juncea*	sweetbush
COWA	*Condalia warnockii*	Warnock's snakewood
ENFA	*Encelia farinosa*	brittlebush
EPHED	*Ephedra* L.	jointfir
FOSP2	*Fouquieria splendens*	ocotillo
HYEM	*Hyptis emoryi*	desert lavender
HYSA	*Hymenoclea salsola*	burrobrush
KRER	*Krameria erecta*	range ratany
KRGR	*Krameria grayi*	white ratany
LATR2	*Larrea tridentata*	creosote bush
LYAN	*Lycium andersonii*	Anderson's wolfberry
LYCIU	*Lycium* L.	wolfberry
LYFR	*Lycium fremontii*	Fremont's wolfberry
TRCA8	*Trixis californica*	American threefold
TRIXIS	*Trixis sp.*	threefold
ZIOB	*Ziziphus obtusifolia*	grey thorn
Trees		
ACGR	*Acacia greggii*	catclaw acacia
CAEM4	*Castela emoryi*	crucifixion thorn
CELTIS	*Celtis* L.	hackberry
CEPA	*Celtis pallida*	spiny hackberry
OLTE	*Olneya tesota*	desert ironwood
PAFL6	*Parkinsonia florida*	blue paloverde
PAMI5	*Parkinsonia microphylla*	yellow paloverde
PRVE	*Prosopis velutina*	velvet mesquite
Succulents		
CAGI7	*Carnegiea gigantea*	saguaro
CYACM	*Cylindropuntia acanthocarpa*	buckhorn cholla
CYBI9	*Cylindropuntia bigelovii*	teddybear cholla
CYLE8	*Cylindropuntia leptocaulis*	Christmas cholla

CYVE3	*Cylindropuntia vericolor*	staghorn cholla
ECEN	*Echinocereus engelmannii*	Englmann's hedgehog cactus
FEWI	*Ferocactus wislizeni*	fishhook barrelcactus
Perennial grass		
ARIST	*Aristida L.*	threeawn
CYDA	*Cynodon dactylon*	Bermudagrass
MUPO2	*Muhlenbergia porteri*	bushy muhly
PLRI3	*Pleuraphis rigida*	big galleta
Perennial forbs		
ACOUR	*Acourtia nana*	Desert peony
ASCLE	*Asclepias* L.	milkweed
BRASS2	*Brassica* L.	mustard
CLDR	*Clematis drummondii*	Drummond's clematis
DAWR2	*Datura wrightii*	scared thorn-apple
DITAXIS	*Ditaxis*	silverbush
ERIN4	*Eriogonum inflatum*	desert trumpet
ERIOG	*Eriogonum sp.*	buckwheat
FUCY	*Funastrum cynanchoides*	Hartweg's twinevine
MAPA	*Marina parryi*	Parry's false prairie-clover
MIRAB	*Mirabilis* L.	four o'clock
NIOB	*Nicotiana obtusifolia*	desert tobacco
OROBA	*Orobanche* L.	broomrape
SPAM2	*Sphaeralcea ambigua*	desert globemallow
SPHAE	*Sphaeralcea* A.	globemallow
STPA4	*Stephanomeria pauciflora*	brownplume wirelettuce
Annuals		
BOBA2	*Bouteloua barbata*	needle grama
EUEX4	*Euphorbia exstipulata*	squareseed spurge
EUPHO	*Euphorbia* L.	spurge
PECTIS	*Pectis angustifolia*	narrowleaf pectis
AAFF		annual forb
AAGG		annual grass
VINE		annual vine