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Bureau of Land Management

Safford Field Office

Safford, AZ

FINAL

Land Health Evaluation Report

Flying W Allotment (No. 51190)

July 2017

Appendix A Amended

November 2017

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List of Acronyms

AUM	animal unit month
BLM	Bureau of Land Management
BO	Biological Opinion
CFF	Cartographic Feature Files
CFR	Code of Federal Regulations
DLG	Data Line Graph
DPC	desired plant community
DRC	desired resource condition
DWR	dry weight rank
EA	environmental assessment
EIS	environmental impact statement
ESD	ecological site description
FO	field office
GIS	geographic information system
GPS	global positioning system
HCPC	historical climax plant communities
HMDS	Heritage Data Management System
Hwy	highway
IPaC	Information for Planning and Conservation system
LHE	land health evaluation
LPI	line point intercept
LUP	land use plan
m^2	meters squared
MLRA	Major Land Resource Area
NAD	North American Datum
NEPA	National Environment Policy Act of 1969
NHD	National Hydrology Data Set
NHPA	National Historic Preservation Act of 1966
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
OHV	off-road highway vehicle
p.z.	precipitation zone

PL	Public Law
RAS	Rangeland Administration System
RHA	rangeland health assessment
RMP	resource management plan
ROD	Record of Decision
SFO	Safford Field Office
SHPO	State Historic Preservation Office
T&E	threatened and endangered
TCP	traditional cultural property
TEAMS	[USFS] Talent, Expertise, Agility, Mobility, and Simplicity Enterprise Unit
TVH	Tagged Vector Hydrological
USC	United States Code
UG	Upper Gila –San Simon Environmental Statement
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

1.0 Introduction

The purpose of this land health evaluation (LHE) report is to determine whether the Arizona Standards for Rangeland Health are being achieved on the Flying W Allotment, or if the standards are not being achieved, to determine if livestock is the causal factor for not achieving or making significant progress towards achieving land health standards. This evaluation is not a decision document but a stand-alone report that clearly records the analysis and interpretation of the available inventory and monitoring data.

The Secretary of the Interior approved Bureau of Land Management (BLM) Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (Arizona Standards and Guidelines) in April 1997. Signed by the Arizona BLM State Director, the Arizona Standards and Guidelines provide for full implementation of the Standards and Guidelines in Arizona BLM land use plans (LUP). Standards and guidelines are implemented by the BLM through terms and conditions of grazing permits, leases, and other authorizations, grazing-related portions of activity plans (including Allotment Management Plans), and through range improvement-related activities.

Land health standards are measurable and attainable goals for the desired condition of the biological resources and physical components/characteristics of desert ecosystems found within the allotment.

The LHE Report ascertains:

1. If standards for rangeland health are being achieved, not achieved, or if significant progress is being made towards achievement of land health standards.

2. Whether livestock grazing is a significant causal factor where it is determined that land health standards are not being achieved.

This report covers an evaluation period of 10 years (2006-2015). This is a standard evaluation period that provides the BLM the ability to collect an adequate amount of information related to grazing use and environmental factors pertaining to the permit renewal process.

1.1 Consultation, Cooperation and Coordination

A letter to interested publics informing that the Flying W Allotment was being considered for permit renewal was distributed via certified mail March 24, 2014. No responses were received. Coordination with the Flying W Allotment permittee has been on-going. Data on special status species was obtained from the U.S. Fish and Wildlife Service (USFWS) and the Arizona Game and Fish Department (AGFD).

A notification letter and draft LHE report were distributed on June 21, 2017, via certified mail to a list of Interested Public as provided in Appendix C. Recipients were notified of (1) a 15-day draft LHE report comment period, and (2) the intent to process the associated grazing permit renewal via a categorical exclusion pursuant to Section 402(h)(1) of the Federal Land Policy and Management Act (FLPMA; 43 U.S.C. 1701 et seq.) One comment was received within the

designated comment period and one additional comment was received outside of the 15-day comment period. As a result, no substantive changes have been addressed in this final LHE report.

1.2 Definition of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration

Arizona standards for rangeland health are expressions of levels of physical and biological condition or degree of function required for healthy lands and sustainable uses, and define minimum resource conditions that must be achieved and maintained. Determination of rangeland health is based upon conformance with these standards.

Guidelines for grazing administration consider type and level of grazing use. Guidelines for grazing management are types of methods and practices determined to be appropriate to ensure the standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools that help land managers and permittees achieve rangeland health standards.

Although the process of developing standards and guidelines applies to grazing administration, present rangeland health is the result of the interaction of many factors in addition to grazing livestock. Other contributing factors may include, but are not limited to, past land uses, land use restrictions, recreation, wildlife, rights-of-way, wild horses and burros, mining, fire, weather, and insects and disease (Arizona Standards and Guidelines, 1997).

The Arizona Standards and Guidelines identify three standards regarding (1) upland sites, (2) riparian-wetland sites, and (3) desired resource conditions based on specific indicators, as discussed in *Section 5.0 Rangeland Inventory and Monitoring Methodology* of this document.

2.0 Allotment Profile and General Description of Evaluation Area

2.1 Location

The Flying W Allotment (No. 51190) is located at the northern end of the Dos Cabezas Mountains in Cochise County, Arizona, approximately seven miles northeast of the city of Willcox. Access is gained from Willcox north on North Railroad Avenue and then east on East Paige Ranch Road.

2.2 Physical Description

A physical description of the Flying W Allotment follows.

2.2.1 Surface Land Ownership

The Flying W Allotment is 5,480 acres in size and consists of 3,719 acres of BLM, 61 acres of state, and 1,639 acres of private land. See Figure 1.

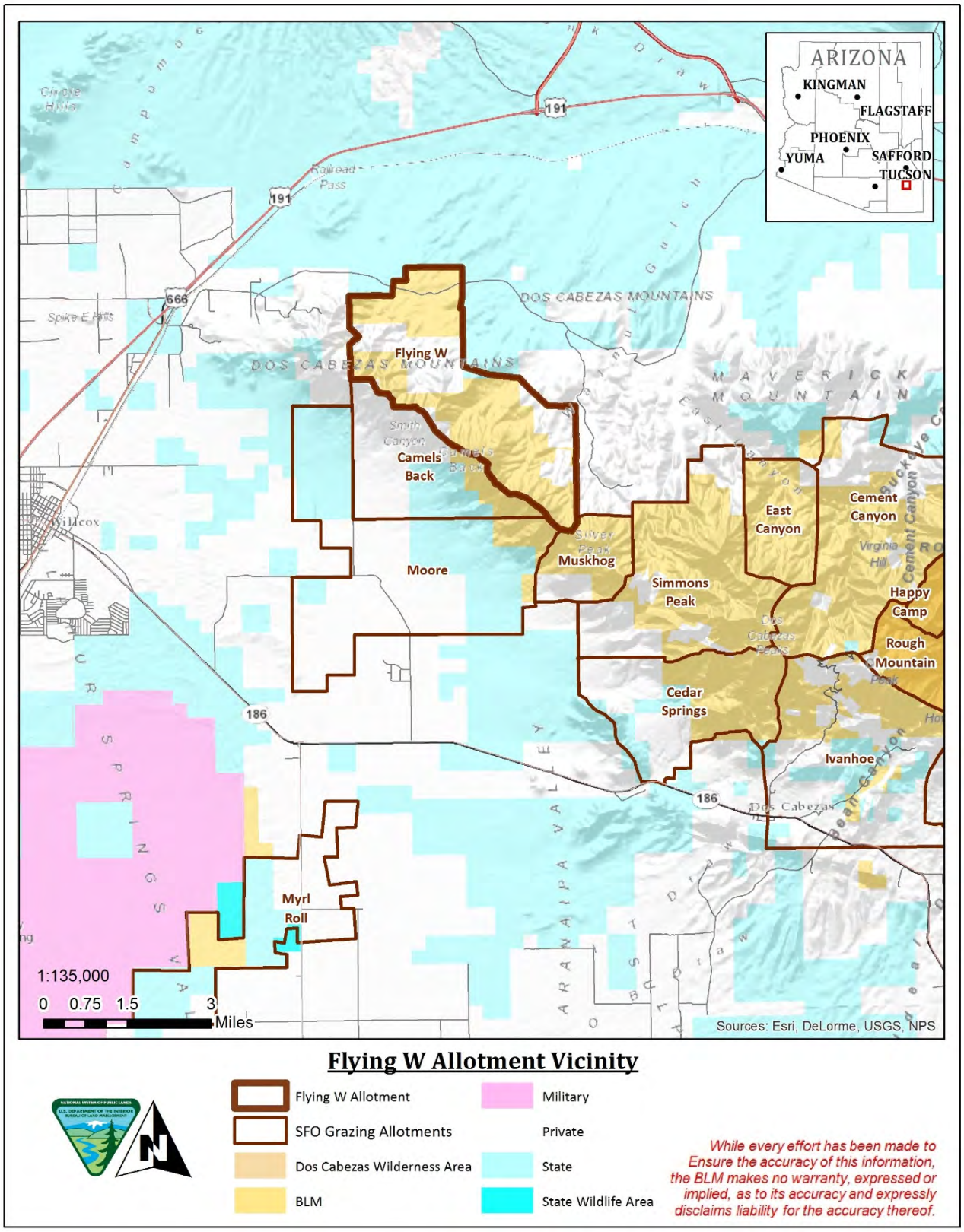

Figure 1 Flying W Allotment Land Ownership and Vicinity

2.2.2 Precipitation

Average annual precipitation for the majority of the allotment ranges from 8-12 inches, with higher elevations receiving 12-20 inches (Figure 2). Average annual rainfall on the Flying W Allotment is 12 inches. Drought years are characterized by the precipitation that is recorded as less than 12 inches for that particular year at this site based on the ecological site description (ESD). The evaluation period of 2006 through 2015 indicate six of the ten years showing below average rainfall, or drought conditions.

Precipitation data from PRISM climate datasets (PRISM 2017) were utilized by selecting a central point within the Flying W Allotment as follows:

- Latitude: 32.2789
- Longitude: -109.6488
- Elevation of 4,570 feet

Climatic data from this source is not collected from a single station, but is modeled using data from many stations and physiographic factors in the area. PRISM 2016 precipitation data for the Flying W Allotment was not available the date queried (April 14, 2017.)

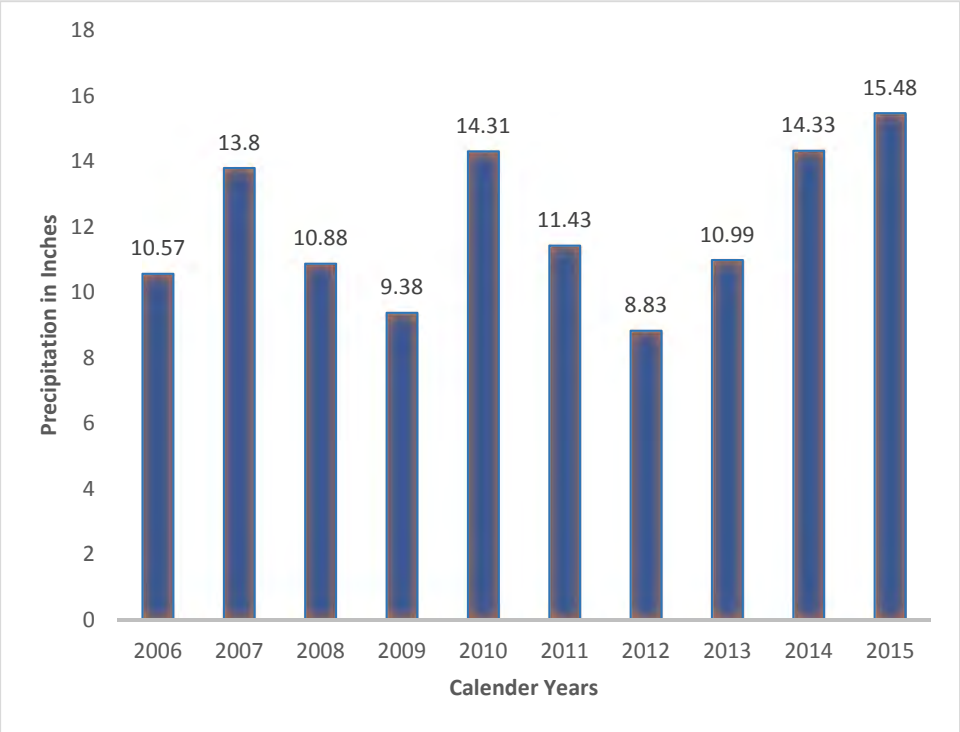

Figure 2 Average Annual Precipitation from PRISM Time Series Data 2006-2015

2.2.3 Temperatures

The following table shows the minimum, maximum, and average temperature recorded between 2006 and 2015 in Willcox, Arizona, and within the vicinity of the allotment.

Table 1 Average Monthly Temperatures in Degrees Fahrenheit (2006-2015)

Month	Minimum	Maximum	Average
January	13°F	76°F	47°F
February	19°F	83°F	52°F
March	26°F	88°F	57°F
April	34°F	95°F	66°F
May	43°F	109°F	76°F
June	53°F	110°F	85°F
July	64°F	110°F	87°F
August	62°F	108°F	84°F
September	51°F	103°F	79°F
October	28°F	96°F	68°F
November	16°F	101°F	58°F
December	19°F	73°F	45°F

Source: USClimateData .com

2.2.4 Soils

The Flying W Allotment is comprised of three primary soil complexes as displayed in Figure 3:

- Atascosa-Chiricahua Rock outcrop complex
- Faraway-Rock outcrop complex
- Sonoita gravelly sandy loam

Other soil complexes are present on the Flying W Allotment, but the sum total accounts for less than one percent of the allotment's total area. These include:

- Comoro soils
- Signal gravelly loam
- Tubac-Sonoita complex

These other soil complexes will not be further addressed in this LHE due to their negligible size and inconsequential effect to evaluating rangeland health within the Flying W Allotment.

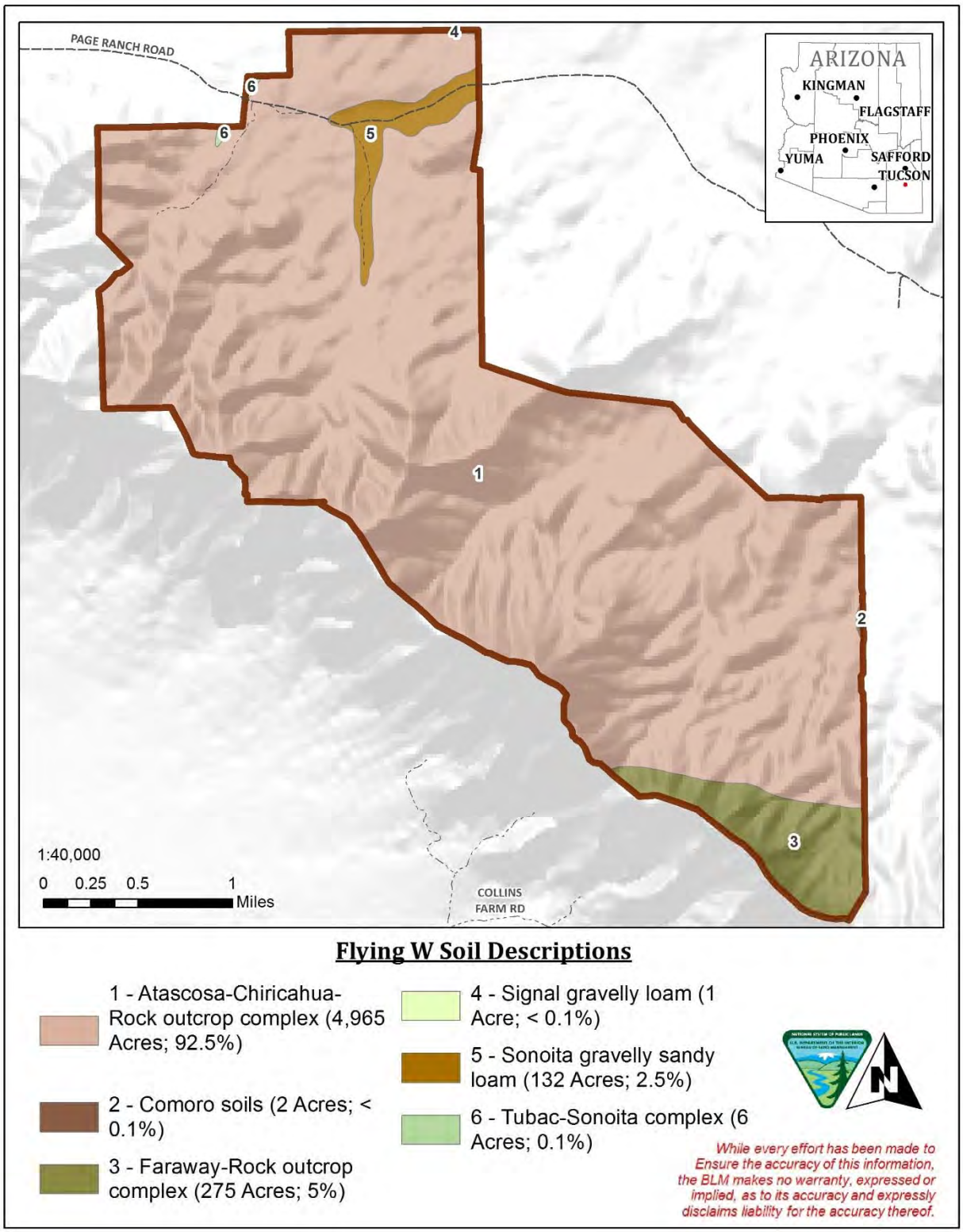

Figure 3 Soil Complexes of the Flying W Allotment

Atascosa-Chiricahua Rock outcrop complex soils exist on moderately steep to very steep hills and mountains at elevations ranging from 3,300 to 5,500 feet. Slopes are dominantly 30 to 45 percent but range from 5 to 70 percent. These soils formed in slope alluvium from rhyolitic conglomerate and rhyolitic tuff. The mean annual temperature ranges from 57 to 66 degrees F. Typically the average annual precipitation ranges from 14 to 18 inches occurring mainly as thundershowers in July and August and as gentle rains in the late fall and winter months; however, this series has been mapped in areas of 12 inches of precipitation zones. May and June are the driest months. The frost-free season ranges from 170 to 250 days. Atascosa-Chiricahua soils have more than 35 percent clay and less than 35 percent gravel in the control section. Soils are well-drained with medium to rapid runoff and moderate permeability. This soil series comprises 92.5 percent (4,965 acres) of the allotment.

Faraway-Rock outcrop complex soils exist on hills and mountains. Elevations range from 5,000 to 7,500 feet. Slopes range from 8 to 80 percent. These soils formed in slope alluvium from rhyolite, rhyodacite, andesite, and granite. The mean annual air temperature is 50 to 59 degrees F. The mean annual precipitation is 16 to 20 inches occurring mainly as thunderstorms in July and August and rain or snow in December and January. The frost-free period ranges from 120 to 180 days. Soils are well drained with medium to high runoff and moderate permeability above the bedrock. This soil series comprises the 5 percent (275 acres) of the allotment.

Sonoita gravelly sandy loam series consists of very deep well drained soils that formed in fan or hillslope alluvium. Sonoita soils are present on fan terraces and hillslopes and have slopes of zero to 20 percent. The average annual precipitation is 10 inches and the mean annual temperature is 63 degrees F. The soils formed in stratified fan or hillslope alluvium derived from granitic rock and minor areas of rhyolite. Elevations range from 2,000 to 5,500 feet. The climate is warm, semiarid continental. The average annual precipitation is 9 to 13 inches with half as thundershowers in July, August, and early September. The remainder occurs as gentle rain and light snowfall in the late fall and winter. The mean annual temperature is 57 to 70 degrees F. The frost-free period is 180 to 280 days. This soil series drains excessively with medium to slow runoff and a moderately rapid rate of permeability. This soil series comprises the 2.5 percent (132 acres) of the allotment.

To view Official Soil Series Descriptions, visit the Natural Resources Conservation Service website at https://soilseries.sc.egov.usda.gov/osdlist.aspx.

2.2.5 Watershed

The Flying W Allotment is within the Upper Gila Watershed (HUC 06, ID # 150400). The Upper Gila Watershed is located in southwestern New Mexico and in southeastern Arizona above Coolidge Dam at San Carlos Reservoir. The watershed drains a total of 12,890 square miles, which represents only one-fifth of the entire Upper Gila Watershed. The Gila River originates in the Mogollon Mountains in western New Mexico and flows westerly through Arizona before flowing into the San Carlos Reservoir. In Arizona, the upper watershed drains 7,430 square miles and is within the Morenci, Duncan Valley, Bonita Creek, and Safford groundwater basin boundaries. Major tributaries of the Gila River within the area are the San Francisco River, Eagle Creek, Bonita Creek, San Simon Creek, and the San Carlos River. Agriculture is the major use of

surface water in the watershed. Irrigation water is obtained from the Gila River at several diversion points and from wells pumping groundwater.

2.2.6 Pastures and Range Improvements

The Flying W Allotment has four pastures, two of which are solely on private land, one is solely on BLM land, and one contains private, BLM, and state land. Cattle have access to the BLM northwest and southeast pastures year-round and maintain even distribution across the two pastures based on water locations and available forage. There is one windmill and associated water storage tank with trough located on private land that services the northwest pasture. Livestock access water facilities located on private land through gate systems associated with the private fences. The northwest pasture also houses one dirt tank that maintains water most of the year. There is one windmill and associated water storage with trough located on BLM and two additional windmills on private land that service the southeast pasture, via access through corrals. Other range improvements on the Flying W Allotment include boundary fences, a cattle guard and three sets of corrals, with two being located on private land and one on BLM.

Spring locations depicted in Figure 4: "Flying W Infrastructure" were gathered from the United States Geological Survey (USGS) National Hydrography Dataset (NHD) layer and "Del's Waters" data layer. The NHD Dataset was developed between the USGS and the EPA using a compilation of USGS hydrologic digital line graph files (DLG), EPA reach files, US Forest Service Cartographic Feature Files (CFF), and USGS Tagged Vector Hydro (TVH). These were all derived from USGS quadrangle maps, and while USGS periodically cycles through the data and network for updating, some of the data sources (Arizona USGS quadrangle maps) have not been updated since as early as the 1980's (USGS, 2017).

"Del's Waters" is a GIS data layer created by BLM Safford Field Office showing geospatial locations of waterbodies inventoried between 1979-2005 by Delbert Molitor, a former BLM Hydrologist, or by range technicians on behalf of Mr. Molitor. The GIS locations were added to the layer for all water source inventories, whether water was found or not. Water source inventories were conducted using BLM Field Form AZ-7211-1A 1980: BLM Water Uses Identifier Information. According to the BLM inventory sheets, historically both the Unnamed and Soapstone springs depicted in Figure 4 were known to be undeveloped and only discharged during the winter months from snow melt. However, both springs were inventoried in 1982 and 1984 respectively, in which the field technicians found the springs to be dried up with no evidence of flow or riparian-obligate species. Since those inventories were conducted, there has been no field or aerial evidence at either spring location to indicate any seasonal or perennial flow or riparian-obligate species. Therefore, the actual field conditions supersede the outdated USGS NHD geospatial data. No riparian-wetland sites are located on the Flying W Allotment.

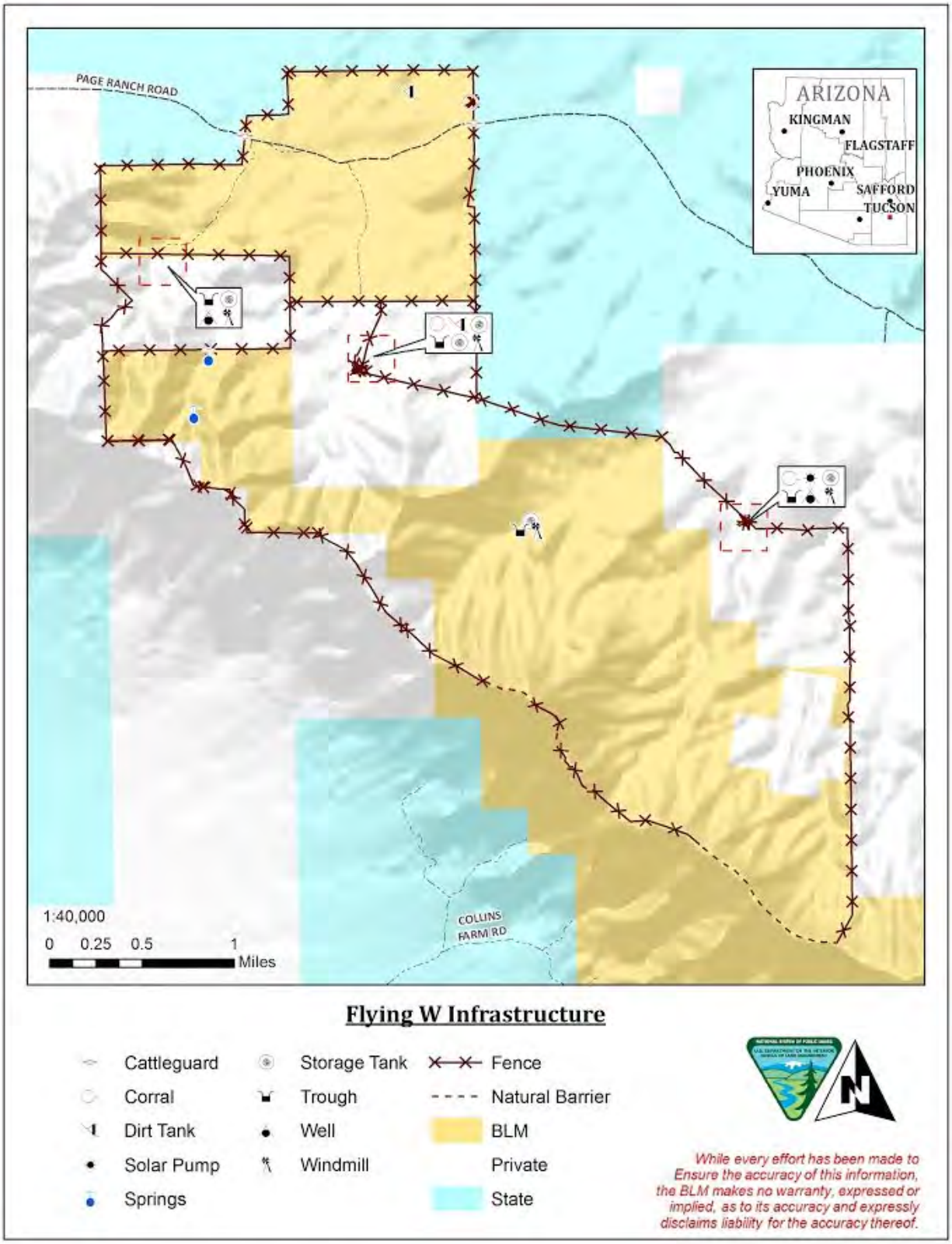

Figure 4 Pastures and Range Improvements

2.3 Biological Resources

This section discusses the biological resources within the Flying W Allotment.

2.3.1 Major Land Resource Areas

The Flying W Allotment is in the Mogollon Transition [Major Land Resource Area (MLRA) 38] and the Southeastern Basin and Range [Major Land Resource Area (MLRA) 41]. An MLRA is a broad geographic area that is characterized by a particular pattern of soils, climate, water resources, vegetation, and land use. Each MLRA, in which rangeland and forestland occur, is further divided into ecological sites.

2.3.2 Ecological Sites within the Flying W Allotment

Ecological sites provide a consistent framework for classifying and describing rangeland soils and vegetation thereby delineating land units that share similar capabilities to respond to management activities or disturbance. See Figure 5 below.

Ecological sites within the Flying W Allotment are:

- Granitic Hills 12-16" p.z. (R038XA104AZ) represents 92 percent of the allotment. This site occurs in the middle elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on fan terraces and old stream terraces. It is always in an upland position.
- Granitic Hills 16-20” p.z. (R038XB204AZ) represents 5 percent of the allotment. This site occurs in the mid to upper elevations of the Mogollon Transition zone south of the Mogollon Rim in central Arizona. It occurs on rugged mountain slopes, ridge-tops, and mesa sides.
- Sandy Loam Upland 8-12’ p.z. (R041XC319AZ) represents 2.5 percent of the allotment. This site occurs in the middle elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs on fan terraces and old stream terraces. It is always in an upland position.
- Clay Loam Upland 12-16” p.z. (R041XA109AZ) represents less than 1 percent of the allotment. This site occurs in the upper elevations of the Madrean Basin and Range Province in southeastern Arizona. It occurs on fan terraces and valley plains.
- Sandy Loam 12-16” p.z. (R041XA110AZ) represents less than 1 percent of the allotment. This site occurs in the middle elevations of the Madrean Basin and Range Province. It occurs on fan terraces, old stream terraces and valley plains.

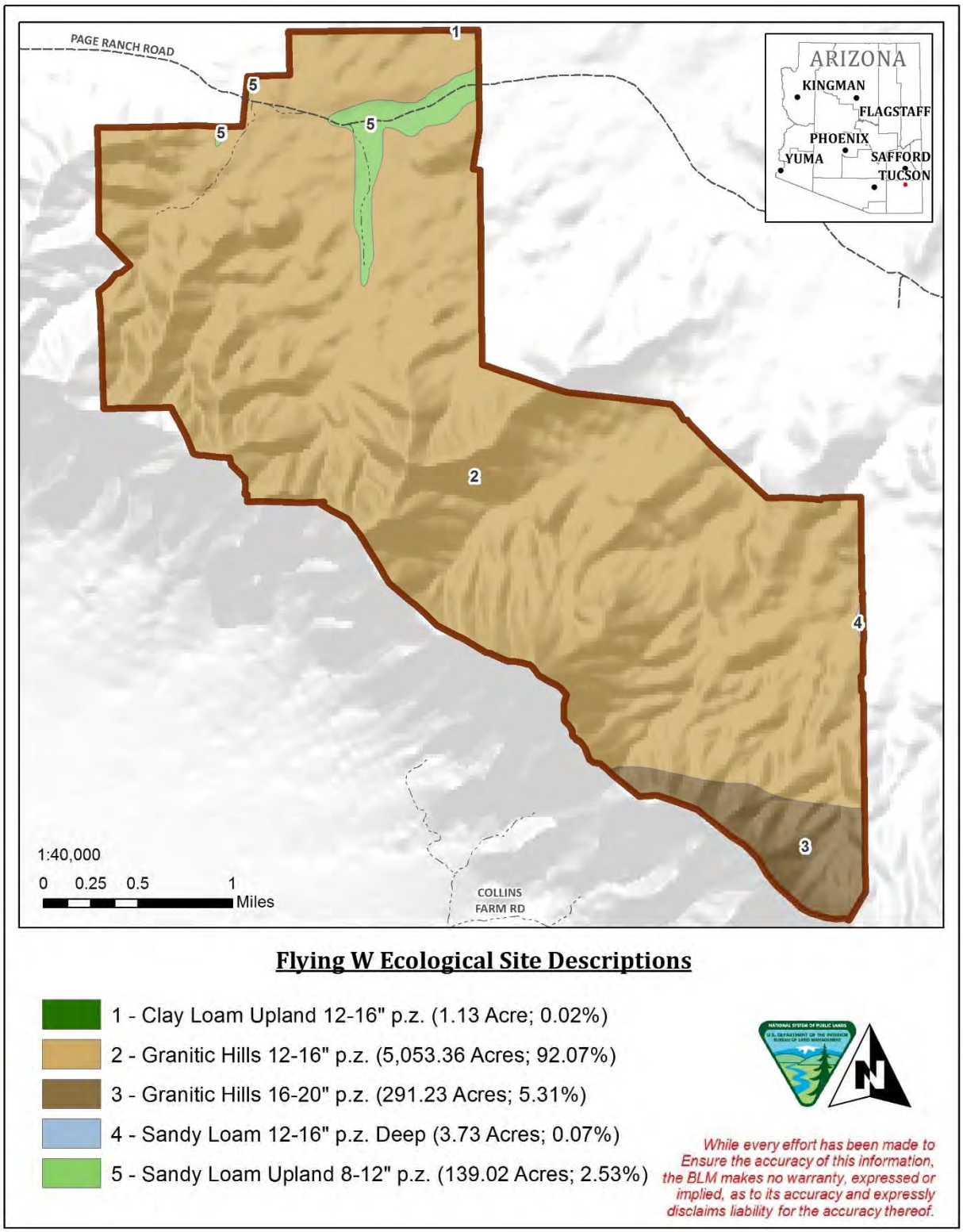

Figure 5 Ecological Sites on the Flying W Allotment

The ESDs are developed by the National Resources Conservation Service (NRCS). The ESDs with established key areas on the Flying W Allotment are provided in summary below. Detailed NRCS ESD reports are stored and accessed within the Ecological Site Information System (ESIS) available online at: https://esis.sc.egov.usda.gov/ESDReport/fsReport.aspx?approved=yes&repType=regular&id=R038XA104AZ

A key attribute of an ecological site is the historic climax plant community (HCPC), or reference state. The historic climax plant community has developed on the ecological site according to soils, topography, and climate.

Granitic Hills 12-16" p.z. (R038XA104AZ)

According to the NRCS ESD (undated), this ecological site occurs in the middle elevations of the Madrean Basin and Range province in southeastern Arizona. It is on hill-slopes and rolling pediments. Slope aspect is site differentiating at elevations near common resource area boundaries. This Granitic Hills 12-16” p.z. ecological site occurs on steep uplands. All moisture is received from precipitation without additional moisture inputs from on-site surface flow. This ecological site has rough surfaces, due to a high cover of gravels, cobbles, and stones, which act to hold water on the site. When the soils are dry, it produces little runoff. It produces significant runoff only when heavy rain falls on snow or moist soils.

This site is suitable for grazing year round, but is not easily traversed by livestock. Livestock grazing use is concentrated on south slopes, canyon bottoms, and ridge-tops. North slopes may be little used. Slopes greater than 50 percent and areas with very cobbly surfaces limit grazing use by cattle. Areas of rock outcrop can form barriers to livestock movement. The site is susceptible to erosion in overgrazed areas, if present, like bed-grounds, livestock trails and lower slopes adjacent to water. The site has good habitat diversity for a great variety of desert wildlife species. Water developments are very important to both livestock and wildlife on this site.

The HCPC is a diverse mixture of desert trees, shrubs, succulents, forbs, and grasses. This includes a diverse flora of native annual grasses and forbs of both the winter and summer seasons (See Section 4.0). North slopes have a chaparral of evergreen shrubs like jojoba, turbinella oak, and flatop buckwheat. Southern exposures will have a higher percentage of desert shrubs, trees, and succulents in the plant community. More xeric grasses will dominate southern exposures (e.g., aristida, tanglehead). Grasses on cooler aspects include desert stipa and sideoats grama. Periodic wildfires occurred at moderate intervals (15 to 30 years) and helped maintain a balance between forbs and shrubs. In the absence of fire for longer periods, shrubby species and cacti can become dominant. The interactions of drought, fire and continuous livestock grazing can, over time, result in the loss of palatable grasses, half shrubs, and suffrutescent forbs. In some situations, non-native annuals can dominate the site. Over time, these species can, diminish the

soil seed-bank of native annual species. Non-native annuals can act to increase the fire frequency of areas of the site near roads and urban areas, where the incidence of man-made fires is high.

Periodic droughts occur and cause significant grass mortality. Droughts in the early 1930s and mid-1950s, 1975-76 and 1988-89, 1995-96, and 2002 resulted in the loss of much of the grass cover on this site. The site recovers rapidly when average rainfall resumes due to good ground cover of gravels and cobbles.

2.3.3 Vegetation Communities

The historic native plant community is a diverse mixture of perennial grasses, suffrutescent forbs, shrubs, succulents, and desert trees. A rich flora of native annual forbs and grasses, of both the winter and summer seasons, exist in the plant community. Periodic naturally occurring wildfires have been important in maintaining the plant community.

North slopes have a chaparral of evergreen shrubs like jojoba, turbinella oak, and flatop buckwheat. Southern exposures will have a higher percentage of desert shrubs, trees, and succulents in the plant community. More xeric grasses will dominate southern exposures (for example, aristida and tanglehead). Grasses on cooler aspects include desert stipa and sideoats grama.

2.3.4 Wildlife Resources

This section discusses the wildlife resources in and around the Flying W Allotment, including threatened and endangered species, BLM sensitive species, migratory birds, Birds of Conservation Concern, and game species. Refer to Appendix A for a list of species.

2.3.4.1 Threatened and Endangered Species

The grazing program for the BLM Gila District, including grazing activities within the Flying W Allotment, was assessed pursuant to Section 7 of the Endangered Species Act to determine whether the program would jeopardize the continued existence of an endangered or threatened species or their designated or proposed critical habitat. The U.S. Fish and Wildlife Service (USFWS) rendered Biological Opinion (BO) on the Gila District Livestock Grazing Program #22410-2006-F-0414 (2012). In addition, a current species list queried from the USFWS Information, Planning, and Conservation System (IPaC) was reviewed on May 16, 2017.

The allotment is within foraging habitat for the federally endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*). Lesser long-nosed bats forage on the pollen, nectar, and fruit of columnar cactus and paniculate agave. The evaluation area, which is the allotment boundary plus a two-mile buffer, does not have columnar cactus, but does have paniculate agave. During drought years, when less forage is produced and available to cattle, herbivory on the agave bolts has been shown to increase (USFWS, 2005). These impacts from grazing were considered in the current Gila District Grazing BO.

The BLM will continue to consider impacts to agaves, as a forage plant for lesser long-nose bats, when evaluating surface disturbing activities to insure no net loss of bat foraging habitat. The

BLM will continue to implement all grazing regulations. No lesser long-nosed roosts are known on the allotment.

The Madrean Evergreen Woodland and Pine-Oak Woodland regions of the Dos Cabezas Mountains are considered suitable habitat for jaguar, although not designated as critical habitat. There is photo evidence (Nov. 2016, May 2017) of at least one jaguar in the Dos Cabezas Mountains. Vegetation characteristic of Madrean Evergreen Woodland and Pine-Oak Woodland occurs at low frequency on the Flying W Allotment.

2.3.4.2 Other Special Status Species

The BLM current list of sensitive species that have suitable habitat present and are known to exist or have the potential to exist within this allotment are the lowland leopard frog, American peregrine falcon, bald eagle, golden eagle, California leaf-nosed bat, cave myotis, greater western mastiff bat, spotted bat, Townsend's big-eared bat, and desert ornate box turtle.

The bird species utilize the grassland, open shrub, and cliff habitat for hunting prey. The bat species may occur on the allotment if roosting habitat is available in caves or mines. Generally, the composition, structure, and distribution of habitat for both classifications of sensitive species are intact and would be suitable for use if the species were present.

The USFWS Birds of Conservation Concern (USFWS, 2008) and Heritage Data Management System (AGFD, 2015) were queried (May 2017) for known occurrences of species covered under the Migratory Bird Treaty Act and Birds of Conservation Concern. Many of these species are discussed in either this or the threatened and endangered species section above. Bird species not already covered are listed in Appendix A.

2.3.4.3 Game Species

Game species on the allotment include Gambel's quail, javelina, mule deer, and white-tailed deer. Mountain lion and black bear occur in limited numbers or only occasionally on the allotment. Shrub dominated upland areas with dispersed thickets offer the best habitat for quail. Mule deer need browse and forbs, dispersed water, and thickets for cover. Javelina make use of succulent vegetation such as prickly pear throughout the year with forbs, tubers, and browse seasonally important; dispersed water and vegetative cover complete their habitat needs. Livestock waters allow deer and javelina to occupy habitats that would only otherwise be available seasonally, when precipitation events create standing water.

2.4 Special Management Areas

There are no special management areas within the Flying W Allotment.

2.5 Recreation Resources

There are no developed recreation sites within the allotment. Hunting is the primary dispersed recreation activity. There is very little signs of recreational use, and no observed fire rings. The

Flying W Allotment's private lands are gated and locked. The allotment's public lands are accessible by foot traffic and horseback through unlocked gates.

2.6 Cultural Resources

Guideline 3-7 in the Arizona Standards and Guidelines provides that, "Management practices to achieve desired plant communities will consider protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples."

A Class I cultural resources survey was completed in 2010 by Safford Field Office Archaeologist Daniel L. McGrew. This survey was to note the presence of any archaeological sites, properties of traditional religious and cultural importance (i.e., traditional cultural properties), and sacred sites. No cultural resources were observed.

2.7 Grazing Management

This section discusses the grazing history, permitted use, and existing terms and conditions of the current permit.

2.7.1 Grazing History

The Flying W Allotment was established under Section 3 of the Taylor Grazing Act, and is commonly referred to a Section 3 allotment. For the Section 3 allotments, the BLM sets the carrying capacity for the entire allotment and permittees are only billed for the available forage utilized on the public lands.

The Flying W Allotment is operated as a two-pasture system (northwest and southeast) for livestock on BLM lands. Both BLM pastures are grazed year-long. The private pastures have been used as horse pastures and holding pastures for cattle during branding operations. Distribution is consistent across the allotment with current available water sources and pasture fencing. Refer to Section 6.1 for Actual Use data.

2.7.2 Mandatory Terms and Conditions for Permitted Use

Grazing use on the Flying W Allotment is currently in accordance with the terms and conditions of the term permit. A summary of the current permitted use for the allotment is provided in Table 2 below.

Table 2 Mandatory Terms and Conditions on the Flying W Allotment

Allotment	Number and Kind of Livestock	Season of Use	Percent Public Lands	Number of Animal Unit Months (AUM)
Flying W (No. 51190)	50 Cattle	March 1 – February 28	72	432

Source: Rangeland Administration System (RAS)

Other Terms and Conditions:

- Only cattle bearing the specified ear tags furnished by the Bureau of Land Management are authorized to graze on this allotment. As of August 21, 2006, the ear tagging Term and Condition will be placed on hold. If unauthorized use becomes a problem on the allotment, the ear tagging Term and Condition will be reinstated.
- In order to improve livestock distribution on the public lands, all salt blocks and/or mineral supplements will not be placed within a ¼ mile of any riparian area, wet meadow or watering facility (either permanent or temporary) unless stipulated through a written agreement or decision in accordance with 43 CFR 4130.3-2 C.
- If in connection with allotment operations under this authorization any human remains, funerary objects, sacred objects or objects or cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (PL 101-601; 104 Stat. 3048; USC 3001) are discovered, the permittee/lessee shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the authorized officer of the discovery until notified by the authorized officer that operations may resume.
- As a term and condition of this permit you are required to submit a report of the actual grazing use made on this allotment for the previous grazing period, March 1 to February 28. Failure to submit such a report by March 15 of the current year may result in suspension or cancellation of the grazing permit.
- Grazing fee payments are due on the date specified on the billing notice, and must be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (greater of $25 of 10 percent of the amount owed but no more than $250) will be assessed.

3.0 Objectives

This section is an overview of the Safford Field Office management objectives that are associated with the Flying W Allotment per the Safford District Resource Management Plan (RMP), and developed through the Arizona Standards and Guidelines.

3.1 Land Use Plan Management Objectives

- Cultural Resources (CL) 19 Cultural resources stipulations will be included on all grazing leases and permits. (Upper Gila –San Simon Environmental Statement [UG] page 4-2.)

- Grazing Management (GM 12) The general objective of the proposed action is to permit livestock to use the harvestable surplus of palatable vegetation–a renewable resource–and thereby produce a usable food product. The proposed livestock management program is based on the multiple-use management concept, which provides for the demands of various resource uses and minimizes the conflicts among those uses or activities. Although the various uses of the rangeland resources can be compatible, competition among uses requires constraints and mitigating measures to realize multiple-use resource management goals. UG Page 1-6.

- GM17 Deviation from the management system could be allowed for circumstances beyond the licensee's control, such as severe drought, but such deviations would require the District Manager's prior authorization. UG Pages 1-8.

- GM32 Proper stocking is an essential principle of range management, which should precede or coincide with the initiation of any grazing management system. With stocking rates in balance with the proposed grazing capacities, utilization of key forage species in the key areas would average about 40 percent over a period of years. At a given stocking rate during years of high forage production (e.g. above normal rainfall) utilization in the use pasture might be as low as 20 percent. During years of low forage production utilization could be as high as 60 percent. UG Page 1-9

- Vegetation Management (VM) 02 Upland vegetation on public lands within the Safford District will be managed for watershed protection, livestock use, reduction of non-point source pollution, Threatened and Endangered species protection, priority wildlife habitat, firewood and other incidental human uses. Best management practices and vegetation manipulation will be used to achieve desired plant community management objectives. Treatments may include various mechanical, chemical and prescribed fire methods. RMP page 24 & 45. Partial [Record of Decision] ROD I page 10.

- VM03 Ecological Site Inventories will be combined with the desired plant community concept to develop management objectives for activity plans as they are written or revised. RMP page 45.

- VM04 Public lands will be managed to preserve and enhance the occurrences of special status species and to achieve the eventual delisting of threatened and endangered species. RMP page 45.

- Wildlife/Fisheries (WF) 02 District management will focus on priority species and their associated habitats to maintain or enhance population levels. Threatened and endangered, proposed, candidate, State-listed and other special status species will be managed to enhance or maintain district population levels or in accordance with established inter/intra-agency management plans. District management efforts will be directed towards the enhancement of biological diversity. RMP ROD Part I page 6.

- WF14 Manage habitat for optimum wildlife populations based on ecological conditions, taking into consideration local, yearly climatic variations. BLM will follow Arizona Game and Fish Department's five-year strategic plans for the various species and will assist the Department in accomplishing its goals for the various species. RMP page 34.

3.2 Allotment-Specific Objectives

The Flying W Allotment is subject to the following objectives as established in the Arizona Standards for Rangeland Health:

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.

3.3 Key Area Objectives

In grazing administration, key areas are indicator sites used to reflect trends in rangeland health on a larger scale resulting from on-the-ground management actions. A key area is a relatively small portion of a range selected as a monitoring point because of its location, use, or grazing value for grazing use. It is assumed that key areas, when properly selected, reflect the overall acceptability of current management over the range and serve as an indicative sample of range conditions, trend, or degree of use.

Key areas are representative of the grazing use occurring on the allotment. A key area should be a representative sample of a large stratum, such as a pasture, grazing allotment, wildlife habitat area, herd management area, or watershed area depending on the management objectives being addressed by the study. Key areas are located in a single ecological site (see Desired Plant Community Key Area Objectives) to measure ecosystem dynamics.

Key species are generally an important component of a plant community as they serve as indicators of change and may or may not be forage species.

Two key areas are established on the Flying W Allotment:

- FW-1
- FW-3A

Both key areas are situated in the Granitic Hills 12-16" p.z. (R038XA104AZ) ecological site within the same pasture. These locations are representative of the ecological site, vegetation, and soils that encompass the 92 percent of the allotment. These two key areas are also representative of the grazing occurring on the allotment. Therefore, assessment of the other four ESDs present on the Flying W Allotment has not been undertaken, as doing so would not provide meaningful data to inform a rangeland health evaluation.

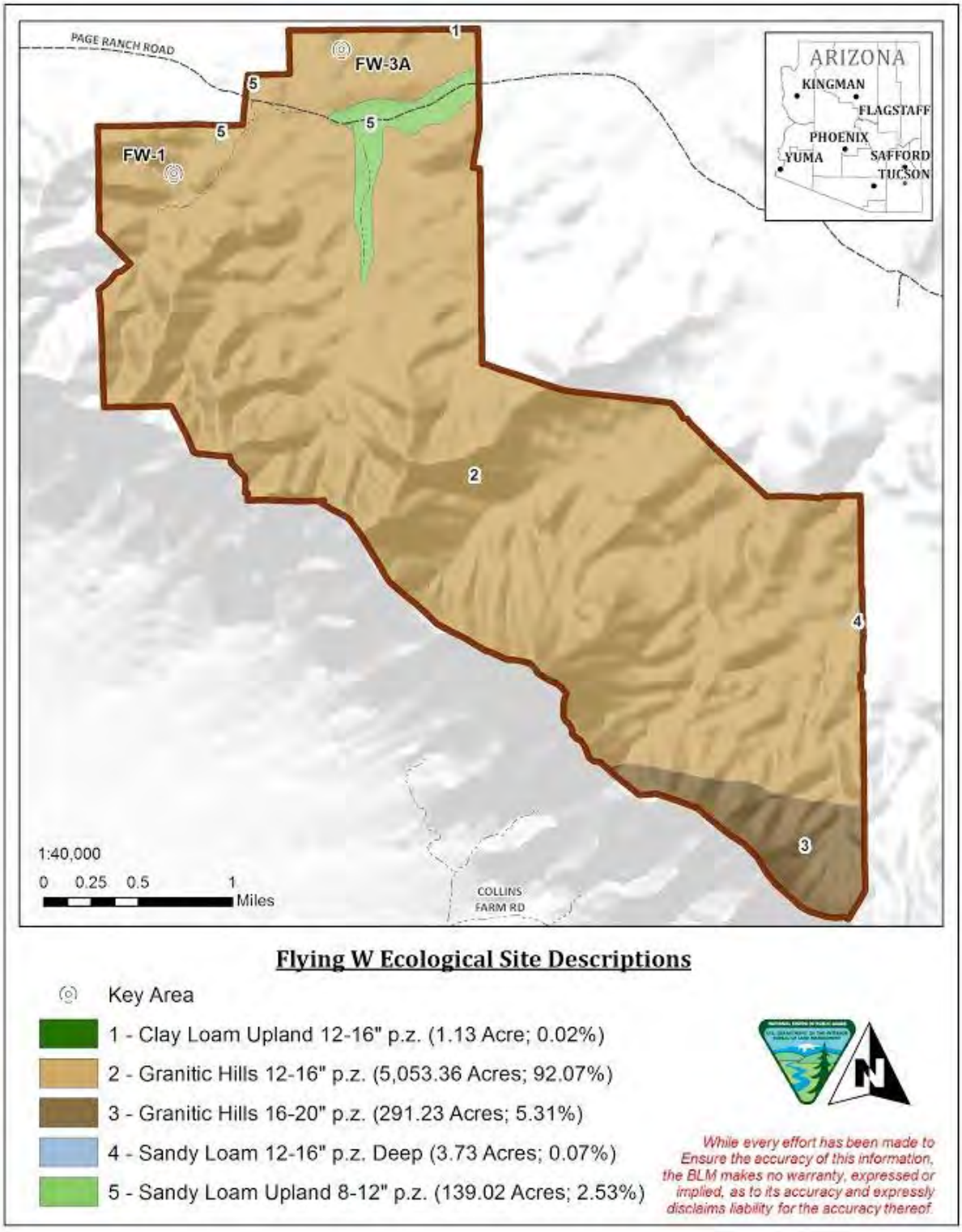

Figure 6 Key Areas on the Flying W Allotment

Standard 1 - Upland Sites

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

Signs of accelerated erosion that are slight to light or light to moderate and are appropriate for this ecological site as indicated by ground cover (litter, rock, vegetative (canopy) cover, etc. and signs of erosion. This objective applies to both key areas and their corresponding ecological site. A departure of moderate or greater would not be achieving the standard. A departure of none to slight or slight to moderate is considered achieving the standard.

Standard 2 - Riparian-Wetland Site

Objective: Riparian-wetland areas are in proper functioning condition.

Standard 2 **does not apply**.
There are no riparian-wetland sites located on the Flying W Allotment.

Standard 3 - Desired Resource Conditions

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

The criterion of meeting desired resource conditions is achievement or conditions leading to desired plant community (DPC). DPC key area objectives are stepped down from the Safford District RMP desired resource conditions to a site-specific level. This measures the attainment of LUP desired future condition goals and multiple use objectives. The current state of the plant community found at each key area was analyzed along with information from the NRCS ESDs and reference sheets. This estimates the potential or capability of the site to produce different kinds and amounts of vegetation, so that the DPC objectives are realistic in terms of what is possible to achieve.

Desired Resource Conditions for FW-1 and FW-3A: Granitic Hills 12-16" p.z. (R038XA104AZ) Ecological Site:

The DPC key area objectives established for the Flying W Allotment are as follows:

- Maintain vegetative community compositions: Perennial grasses minimum 20-30 percent, shrubs maximum 25-30 percent, trees maximum 0-5 percent, and forbs minimum 5-10 percent.
- Maintain a minimum perennial canopy cover for grasses at 1-10 percent, shrubs 1-10 percent, trees 0-5 percent, and forbs 1-10 percent.
- Maintain litter between a minimum 20-50 percent.
- Maintain bare ground 5-10 percent.

Rationale:

The recommended levels of total canopy cover for grasses, shrubs, and forbs will provide sufficient cover for wildlife species (e.g., mule deer, quail, and non-game species) and prevent accelerated erosion of the site. In addition, maintaining canopy cover levels for grasses and mid-level shrubs will provide important nesting and escape cover for quail. Maintaining composition of palatable shrub species and key perennial grass species levels will also provide forage for wildlife and livestock on the Flying W Allotment (see list of key species in Section 4.0).

4.0 Plant List

The following is a list of plant species within the dominant ecological site located on the Flying W Allotment. These plant species provide key forage and cover for livestock and wildlife species.

Table 3 Plant List

Scientific Name	Common Name	Plant Symbol
Perennial Grasses		
Aristida spp.	Threeawn	ARIST
Bothriochloa barbinodis	Cane beardgrass	BOBA2
Bouteloua chondrosioides	Sprucetop grama	BOCH
Bouteloua curtipendula	Sideoats grama	BOCU
Bouteloua eriopoda	Black grama	BOER4
Bouteloua gracilis	Blue grama	BOGR2
Digitaria californica	Arizona cottontop	DICA8
Eragrostis lehmanniana	Lehmann lovegrass	ERLE
Hilaria belangeri	Curly mesquite	HIBE
Muhlenbergia porteri	Bush muhly	MUPO
Pleuraphis mutica (Hilaria mutica)	Tobosa	PLMU3
Tridens pulchellus	Fluff grass	DAPU7
Sporobolus R.	Dropseed	SPORO
Urochloa arizonica	Arizona signalgrass	PAAR
Perennial Forbs		
Dichelostemma capitatum	Bluedicks	DICA14
Euphorbia spp.	Spurge	EUPHO
Sphaeralcea spp.	Globemallow	SPHAE
Vachellia constricta	Whitethorn acacia	VACO9
Acacia Greggii	Catclaw acacia	ACGR
Aloysia wrightii	Wright Beebush	ALWR
Ephedra trifurca	Mormon tea	EPTR
Gutierrezia sarothrae	Snakeweed	GUTIE
Mimosa biuncifera	Wait-a-bit mimosa	MIBI3
Opuntia spp.	Prickly pear	OPUNT
Prosopis velutina	Velvet Mesquite	PRVE
Yucca elata	Soaptree yucca	YUEL

5.0 Rangeland Inventory and Monitoring Methodology

The standards of rangeland health were assessed for the Flying W Allotment by a U.S. Forest Service interdisciplinary (ID) team on January 7, 2014. The ID team consisted of rangeland management specialists and a wildlife biologist. Documents and publications used in the assessment process include the Soil Survey of Arizona (NRCS, 2017), Ecological Site Descriptions for Major Land Resource 38 (NRCS, 2009), Interpreting Indicators of Rangeland Health Technical Reference 1734-6 (USDI-BLM et al., 2004), Sampling Vegetation Attributes (USDI-BLM et al., 1996), and the National Range and Allotment Handbook (USDA-NRCS, 2003). A complete list of references is included at the end of this document. All are available for public review in the BLM Safford Field Office. The ID team used rangeland monitoring data and professional observations to assess conformance with the Arizona Standards for Rangeland Health.

Two key areas (FW-1 and FW-3A**)** were monitored on the Flying W Allotment. Quantitative measurements for cover and species composition, collected along each transect, was used in conjunction with qualitative indicators of soil quality, hydrologic function, and biological health in order to assess existing condition of ecological sites at key areas within the allotment. Existing conditions were compared to site specific reference conditions established by the NRCS, thought to represent relatively undisturbed states within a given soil-plant community type. This comparison between existing and reference conditions determines the level of departure from the potential natural community.

Inventory and monitoring data were collected in 2014 using the monitoring protocol listed in Section 5.1 See Appendices B for this data.

5.1 Monitoring Protocol

Line Point Intercept

The method used to obtain transect data pertaining to species composition and soil cover was the line point intercept (LPI) method which consists of a horizontal, linear measurement of plant intercepts along the course of a line (tape) 100 feet in length. LPI is a rapid and accurate method for measuring occurrence of grass or grass-like plants, forbs, shrubs, and trees in which vegetation composition is extrapolated. It also quantifies soil cover, including vegetation, litter, rocks, and biotic crusts. These measurements are indicators of wind and water erosion, water infiltration and the ability of the site to resist and recover from degradation.

Ground Cover

Ground cover is the amount of surface area comprised of bare ground, perennial plant bases, litter, gravel, or rocks. Ground cover data is recorded through each soil protection category and expressed as a percentage of total hits. This reflects the amount of litter, vegetative root bases, gravel, and rocks available to intercept raindrop impact before reaching the soil and of bare ground exposed to climatic elements. Cover data were collected with each quadrat placement. A single point from the quadrat was consistently the focal point for cover category classification. Ground cover parameters established prior to data collection are as follows:

- One ground cover hit is recorded per quadrat placement. The total number of ground

cover hits equals the total number of quadrat placements.

- Litter is dead plant material directly covering the ground, dead perennial vegetative bases, or animal material. If a small stem or piece of litter is not considered large enough to intercept raindrop impact, the hit is the ground covering below it.
- Bare ground is soil with particles up to 1/4 inch; gravel are particles 1/4-3 inches in size; rocks are ≥3".
- Annual grasses and annual forbs are considered litter cover when in contact with the ground and large enough to intercept raindrop impact.

Pace Frequency

Pace frequency is the number of times a plant species is present within a given number of uniformly sized sample quadrats (plot frames placed repeatedly across a stand of vegetation). When a plant species is present that is equated to a "hit". Plant frequency is expressed as percent presence for each species encountered within total number of quadrat placements; therefore, frequency reflects the probability of encountering a particular plant species within a specifically sized area (quadrat size) at any location within the key area. The total number of frequency hits among all species will not equal the total number of quadrat placements and frequency is insensitive to the size or number of individual plants. Frequency is a very useful monitoring method but does not express species composition, only species presence. Frequency is an index that integrates species' density and spatial patterns.

A 40 x 40 cm. (0.16 m^2) quadrat is used for pace frequency applied as follows:

- Species present within the bounds of the sample quadrat are recorded with a single tally.
- If no species are present, no frequency data are recorded.
- Perennial or annual grasses and forbs must be rooted within the quadrat to be counted.
- A grass or forb plant base present under the quadrat frame is considered "in."
- Annual plants, grasses, and forbs are counted whether green or dried.
- Tree/shrub canopy and basal hits are recorded separately. Over time, these parameters can indicate changes in tree/shrub size (canopy) or plant numbers (basal).
- A canopy hit is any part of the tree or shrub that overhangs the quadrat (enters an imaginary vertical projection of the plot frame).
- Quadrat placements are placed at one-pace intervals (2 steps), patterned in transects (straight lines), and are run parallel to each other, generally following contouring slopes, within the area of one ecological site (vegetation and soil type).

Fetch

Fetch is the distance from the nearest perennial plant base within 360 degrees of the quadrat's ground cover point. Fetch, reported with descriptive statistics, relates to plant distribution and watershed characteristics. Perennial plant cover can reduce soil erosion by creating an obstruction, thus slowing the rate of overland flow. A shorter distance between perennial plant

bases lessens the opportunity for flowing water to acquire the necessary energy to remove soil and litter from a site (erosion). Over time, fetch data can be used to assess changes in the spatial distribution and connectivity of vegetation patches. Additionally, fetch data can be used to document trends in plant cover fragmentation for rangeland health evaluation. One-hundred distances were measured in conjunction with pace frequency as baseline data for future monitoring.

Dry Weight Rank (DWR)

Dry weight rank estimates plant composition on a dry weight production basis. This data collection was made using a 40 cm by 40 cm plot frame and 100 placements. The three perennial species within a vertical projection of quadrats placed repeatedly (100 times) comprising the most annual biomass production on a dry weight basis are ranked (1st, 2nd, and 3rd most biomass). Multiple ranks are given when less than three species are present. No tally is recorded at quadrat placements void of perennial species.

5.2 Indicators of Rangeland Health

The five steps for Rangeland Health Assessment (RHA) are protocols for evaluating the three rangeland health attributes (soil/site stability, hydrologic function, and biotic integrity), as outlined in Technical Reference 1734-6. They are:

Step 1. Identify the Evaluation Area; Determine the Soil and Ecological Site

Step 2. Obtain or Develop the Reference Sheet and the Corresponding Evaluation Matrix

Step 3. Collect Supplementary Information

Step 4. Rate the 17 Indicators on the Evaluation Sheet

Step 5. Determine the Functional Status of the Three Rangeland Health Attributes:

1. Soil and site stability (S) – The capacity of an area to limit redistribution and loss of soil resources (including nutrients and organic matter) by wind and water.
2. Hydrologic function (H) – The capacity of an area to capture, store, and safely release water from rainfall, run-on and snowmelt (when relevant), to resist a reduction in this capacity, and to recover this capacity when a reduction does occur.
3. Biotic integrity (B) – The capacity of the biotic community to support ecological processes within the normal range of variability expected for the site, to resist a loss in the capacity to support these processes, and to recover this capacity when losses do occur. The biotic community include plants, animals, and microorganisms occurring both above and below ground.

The RHA provides information on the functioning of ecological processes (water cycle, energy flow, and nutrient cycle) relative to the reference state for the ecological site or other functionally similar unit for that land area. This assessment provides information that is not available with other methods of evaluation. It gives an indication of the status of the three rangeland attributes chosen to represent the health of the "evaluation area" (i.e., the area where the evaluation of the rangeland health attributes occurs). The following are the 17 indicators that are evaluated during a RHA assessment and the attribute(s) they measure:

- Rills: S, H
- Water Flow Patterns: S, H
- Pedestals and/or Terracettes: S, H
- Bare Ground: S, H
- Gullies: S, H
- Wind-Scoured, Blowout, and/or Depositional Areas: S
- Litter Movement: S
- Soil Surface Resistance to Erosion: S, H, B
- Soil Surface Loss or Degradation: S, H, B
- Plant Community Composition and Distribution Relative to Infiltration and Runoff: H
- Compaction Layer: S, H, B
- Functional/Structural Groups: B
- Plant Mortality/Decadence: B
- Litter Amount: H, B
- Annual Production: B
- Invasive Plants: B
- Reproductive Capability of Perennial Plants: B

Attribute ratings reflect the degree of departure from expected levels for each indicator per the Reference Sheet. The degree of departure may be categorized as:

- Extreme to Total
- Moderate to Extreme
- Moderate
- Slight to Moderate
- None to Slight

5.3 Utilization

Utilization refers to the percentage of current forage removed by grazing animals, or the amount of residual vegetation left after grazing. Utilization for each key area on the Flying W Allotment is presented below.

Key Areas FW-1 and FW-3A (Granitic Hills 12-16" p.z., R038XA104AZ)

Utilization measurements at key area FW-1 on January 7, 2014, indicated 20 percent utilization (slight) on Black Grama (*Bouteloua eripoda*) and 21 percent utilization (light) on Lehmann

Lovegrass (*Eragrostis lehmanniana*). This indicates slight to light utilization (1 to 40 percent) of grasses.

Utilization measurements at key area FW-3 on January 7, 2014, indicated 46 percent utilization (moderate) on Black Grama (*Bouteloua eripoda*) and 13 percent utilization (slight) on Tobosa (*Pleuraphis mutica*).This represents slight to moderate utilization (1 to 60 percent) of grasses.

In summary, livestock utilization of grasses at key areas on the Flying W Allotment is at or below the light to moderate utilization rating. This indicates current water placement and livestock distribution is supporting current acceptable levels of livestock use.

Under existing grazing capacities, utilization of key forage species in the key areas would average about 40 percent over a period of years. At the given stocking rate during years of high forage production (e.g., above normal rainfall) utilization could be as low as 20 percent. During years of low forage production utilization could be as high as 60 percent.

Table 4 Range Utilization Ratings for Key Forage Plants

Rating	Description
No Use (0%)	The rangeland shows no evidence of use by grazing animals.
Slight use (1-20%)	The rangeland has the appearance of very light grazing. The key herbaceous forage plants may be topped or slightly used. Current seedstalks and young plants of key herbaceous species are little disturbed. The available leaders of key browse plants are little disturbed.
Light (21 - 40%)	The rangeland may be topped, skimmed, or grazed in patches. The low value herbaceous plants are ungrazed at 60 to 80% of the number of current seedstalks of key herbaceous plants remains intact. Most young plants of the key species are undamaged. Little or no one of low value plants. There is obvious evidence of leader use. The available leaders appear cropped or browsed in patches and 21 to 40% of the available leader growth of the key browse plants has been removed.
Moderate (41 - 60%)	The rangeland appears entirely covered as uniformly as natural features and facilities will allow. 15 to 25% of the number of current seedstalks of key herbaceous species remain intact. No more than 10% of the number of low value herbaceous forage plants are utilized. Browse plants appear rather uniformly utilized and 41 to 60% of the available leader growth of key browse plants has been removed.
Heavy (61 - 80%)	The rangeland has the appearance of complete search. Key herbaceous species are almost completely utilized with more than 10% of the number of low value herbaceous forage plants have been utilized. The preferred browse plants are hedged and some plant clumps may be slightly broken. Nearly all available leaders are used and few terminal buds remain on key browse plants. Approximately 61 to 80% of the available leader growth of the key browse plants has been removed.
Severe (81-100%)	The rangeland has a mown appearance and there are indications of repeated coverage. There is no evidence of reproduction of current seedstalks of key herbaceous species. Key herbaceous forage species are completely utilized. The remaining stubble of preferred grasses are grazed to the soil surface. There is no evidence of terminal buds and 81 to 100% of available leader growth of the browse plants have been utilized. Hedging is readily apparent and the browse plants are more frequently broken.

6.0 Management Evaluation and Summary of Studies Data

The following information is the evaluation and summary of the RHAs conducted on the Flying W Allotment in 2014.

6.1 Actual Use

Actual use per the BLM Rangeland Administration System (RAS) that has occurred on the Flying W Allotment is provided in Table 5 below. As indicated, full permitted use (AUMs) have been implemented on the allotment in recent years.

Table 5 Actual Use on the Flying W Allotment

Preference (AUMs)										
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
432	432	432	432	432	432	432	432	432	432	432

6.2 Rangeland Health Assessments

RHAs were completed at two key areas (FW-1 and FW-3A). Ratings of moderate or more are considered to indicate resource concerns for soil erosion, water quantity, and plant productivity. It is important to remember that these ratings are made relative to the potential for the site. For example, a site with highly erodible soils and low potential for stabilizing vegetation may be rated as having a slight departure from reference conditions even though the actual amount of soil movement is significant, while a site with a high potential for stability rated "moderate" may have relatively little soil movement. Refer to Table 6 for a summary of the assessments conducted at the established key areas on the Flying W Allotment.

Table 6 Summary of Upland Health Assessments

Key Area	Ecological Site	Range Health		
		Soil	Hydrology	Biotic Integrity
FW- 1	Granitic Hills 12-16” p.z.	None to slight	None to slight	None to slight
FW-3A	Granitic Hills 12-16” p.z.	None to slight	None to slight	None to slight

FW-1 and FW-3A [Granitic Hills 12-16" p.z. (R038XA104AZ)]

The reference condition indicates:

- There should be no presence of rills.
- Less than 5-15 percent cover of water flow patterns.

- North aspect: very short (5 feet), discontinuous, almost indistinguishable among high cobble/gravel/vegetation cover. South aspect: common (5-15 percent of area), short (< 5 ft), and discontinuous and rock/gravel armored.
- The soil material is generally not conducive to forming continuous stands of plants that promote terracettes.
- Bare ground; North aspect: 5-10 percent bare ground evenly distributed among gravel/rock cover; non-vegetated areas are scarce. After fire, 25-30 percent bare ground is observed. South aspect: 10-15 percent bare ground evenly distributed among gravel/rock cover; after fire, 25-30 percent bare ground is observed.
- No gullies or erosion should be present.
- No wind scoured blowouts should be present.
- All litter should be staying in place.
- Soil surface resistance to erosion; north and south aspects: no difference between canopy-protected and unprotected soil slake values. All values rated as 5 and 6.

Rangeland Health Attribute 1: Soil and Site Stability

Table 7 below presents the current and expected soil and site stability conditions at key areas FW-1 and FW-3A. Soil cover components include plants, biological crusts, litter, surface fragments, rock, and bare ground. Overall, the soils on the allotment are stable. The allotment exhibits biotic integrity, and it is in a productive and sustainable condition. Vegetative cover collected at both sites was adequate to ensure soil stabilization and appropriate for permeability rates within the ecological system (see Appendix B - USFS TEAMS Monitoring Data 2014). There were no rills or gullies, pedestals were uncommon, and terracettes were not observed, these indicators were rated none to slight. Water flow patterns are less than 5 percent for the site and rated none to slight. Bare ground was measured at 3 percent at FW-1 and 10 percent at FW-3A and rated none to slight. All litter size classes remained in place with little to no movement and rated none to slight. There was no evidence of wind-scouring and was rated none to slight. Soil surface is naturally armored by rock and foliar cover. Total rock fragments greater than 1/4 inch in size measured 71 percent at FW-1 and 50 percent at FW-3A. Foliar cover was measured at 76 percent total cover and 14 percent basal cover at FW-1, and 37 percent total cover with 9 percent basal cover at FW-3A (see Appendix B). Soil surface resistance to erosion was rated as none to slight as was soil surface loss. Compaction layers were not present and not restricting water infiltration or root penetration and was rated none to slight.

Table 7 Conditions Comparison Between Current and Described in ESD Granitic Hills 16-20" p.z. (R038XA104AZ – NRCS 2009)

Source	Basal Cover				Non-Vascular Plants	Biological Crust	Litter	Surface Fragments > ¼" & <= 3"	Surface Fragments > 3"	Bedrock	Water	Bare Ground
	Grass/ Grasslike	Forb	Shrub/ Vine	Tree								
ESD Reference Condition	2 to 5	1 to 2	1 to 2	0 to 1	0 to 2	0 to 1	20 to 50	25 to 50	1 to 15	1 to 15	0 to 0	10 to 50
FW-1 Key Area Observation	13	0	1	0	0	0	51.5	23.8	47.5	0 to 0	0 to 0	3
FW-3A Key Area Observation	5	1	1	0	2	0	35	39.6	9.9	0	0	9.9

Rangeland Health Attribute 2: Hydrologic Function

At both key areas, there were no rills or gullies, pedestals were uncommon, and terracettes were not observed; therefore, these indicators were rated none to slight. Water flow patterns are less than 5 percent for the site and rated none to slight. Bare ground was measured at 3 percent at FW-1 and approximately 10 percent at FW-3A and rated none to slight. Soil surface is naturally armored by rock and foliar cover. Total rock fragments greater than 1/4 inch in size measured approximately 71 percent at FW-1 and 50 percent at FW-3A. Foliar cover was measured at 76 percent total cover and 14 percent basal cover at FW-1, and 37 percent total cover with 9 percent basal cover at FW-3A. Soil surface resistance to erosion was rated as none to slight, as was soil surface loss. Litter amounts measured at FW-1 was 52 percent and 35 percent at FW-3A, therefore resulting in a litter rating of none to slight. Compaction layers were not present and not restricting water infiltration or root penetration, thus rated none to slight.

Plant community composition and distribution relative to infiltration was assessed for several of the indicators (e.g., soil stability, litter production, vegetation cover, and bare ground.) At both key areas, perennial grasses were effective at soil stability due to their basal area and their fine fibrous root systems and were not being restricted by a compaction layer. Grasses on these sites contribute organic matter directly into the soil and help build stable soil aggregates, leading to soil stability that allows for infiltration. In addition, the plant and litter cover on the sites increases infiltration and decrease runoff. Plant community composition and distribution relative to infiltration was rated none to slight.

Rangeland Health Attribute 3: Biotic Integrity

Soil surface is naturally armored by rock and foliar cover. Total rock fragments greater than 1/4 inch in size measured 71 percent at FW-1 and 50 percent at FW-3A. Foliar cover was measured at 76 percent total cover and 14 percent basal cover at FW-1, and 37 percent total cover with 9 percent basal cover at FW-3A. Soil surface resistance to erosion was rated as none

to slight as was soil surface loss. Compaction layers were not present and not restricting water infiltration or root penetration, rating none to slight. Functional/structural groups were intact with grasses, forbs, shrub/vines, and trees being within range of ESD described amounts. Plant community composition of perennial and annual species, structure and distribution are within range as referenced in the ESD (see appendix B). Plant mortality/decadence were rated none to slight, recruitment was occurring on the site with a mixture of age classes on site, no excessive plant mortality/decadence occurring. Litter amounts measured at FW-1 was 52 percent and 35 percent at FW-3A and was rated none to slight. Annual production were rated as none to slight and were appropriate for both sites. No invasive plants were observed on the sites and rated none to slight. Reproductive capability of perennial plants was as expected at sites and rated none to slight, with perennial grasses producing seed stalks and/or stolons. Wildlife populations, special status species habitat and populations were rated none to slight with the current livestock management allowing for the contribution of resources to improve and support wildlife habitat.

Conditions within the Granitic Hills 12-16" p.z. ecological site on the Flying W Allotment are in the HCPC, mixed shrub, forb state (see Figure 6 – State and Transition Model). Key area FW-1 is located on an east aspect. The site was found to have a none to slight deviation from the reference community as described in the state and transition model. Key area FW-3A is located on a west aspect. In 2014, utilization at FW-1 and FW-3A was found to be slight to moderate.

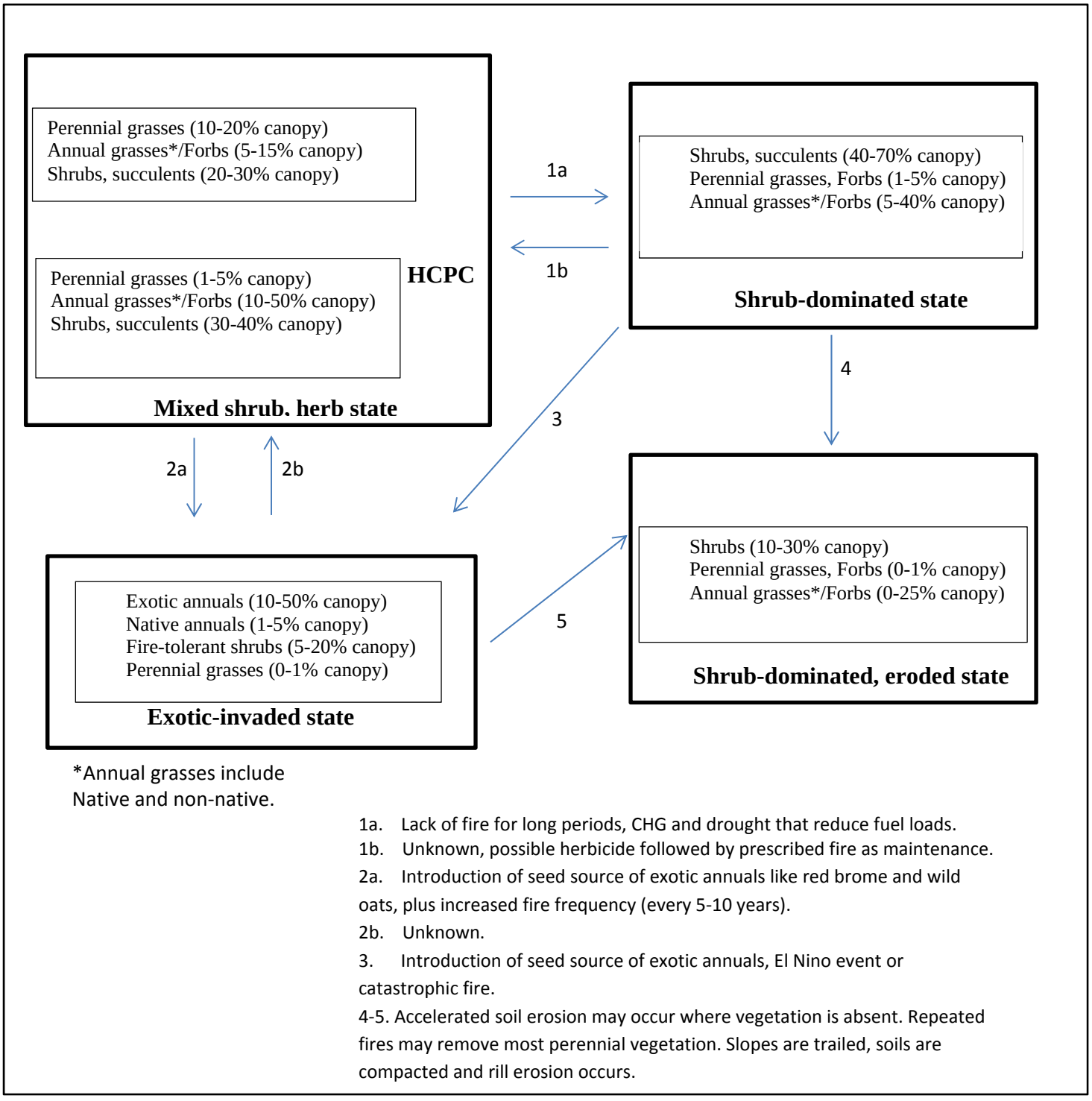

Figure 7 Granitic Hills 12-16" p.z. (R038XA104AZ) State and Transition Model

Figure 8 Key Area Monitoring (FW-1) and LHE Site in 2014

Figure 9 Key Area Monitoring (FW-3A) and LHE Site in 2014

7.0 Determinations of Land Health Standards

Standard 1: Upland Sites

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that appropriate to soil type, climate and land form.

Determination:

☒ Meeting the Standard

☐ Not Meeting the Standard; Making Significant Progress Towards Standard

☐ Not Meeting the Standard; Not Making Significant Progress Toward Standard

Rationale:

The data at both key areas shows that cover and litter are adequate to ensure soil stabilization and appropriate permeability rates within the Granitic Hills 12-16" p.z. (R038XA104AZ) ecological site. The ESD describes the ecological dynamics of the site on the allotment as possessing plant communities that are diverse (NRCS 2009). These variations occur due to site aspect, soils, and other natural conditions. The ESD for FW-1 and FW- 3A describes the HCPC as:

"The historic, native, plant community is a diverse mixture of perennial grasses, suffrutescent forbs, shrubs, succulents and desert trees. A rich flora of native annual forbs and grasses, of both the winter and summer seasons, exist in the plant community. Periodic, naturally occurring, wildfires were important in maintaining the potential plant community."

Overall, the soils throughout the Flying W Allotment are productive, stable, and in a sustainable condition. There were no rills/gullies present at any of the study sites and pedestals and/or terracettes were none to slight. Wind-scouring and litter movement were none to slight. Almost the entire allotment is naturally armored by rocks. The allotment is within the variability of the state and transition model as delineated in the ESD. Refer to Table 6 in Section 6.

Standard 2: Riparian-Wetland Sites

Riparian-wetland areas are in proper functioning condition.

Determination:

☐ Meeting the Standard

☐ Not Meeting the Standard; Making Significant Progress Toward Standard

☐ Not Meeting the Standard; Not Making Significant Progress Toward Standard

☒ Standard Does Not Apply

Rationale:

There are no riparian-wetland sites located on the Flying W Allotment; therefore, Standard 2 does not apply.

Standard 3: Desired Resource Conditions on the Flying W Allotment.

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

Determination:

☒ Meeting the Standard

☐ Not Meeting the Standard; Making Significant Progress Toward Standard

☐ Not Meeting the Standard; Not Making Significant Progress Toward Standard

Rationale:

Based on monitoring data and this evaluation, current livestock grazing is allowing the Flying W Allotment to maintain and achieve the DPC objectives identified in *Section 3.3 Key Area Objectives*, for continued land health and wildlife habitat. The RHA indicates that soil/site stability, hydrologic function, and biotic integrity are meeting the standards for this site. Data from the allotment's key areas and RHA indicate that these sites are achieving the objectives for canopy cover, shrubs, perennial grasses, and ground cover. The shrub and forb composition and density is sufficient to provide forage and shelter for livestock and wildlife species.

The DPC objectives for the vegetative community compositions are established as follows: perennial grasses minimum of 20-30 percent, shrubs maximum of 25-30 percent, trees maximum of 0-5 percent, and forbs minimum of 5-10 percent. The data collected for the RHA are:

> FW-1: perennial grasses 81 percent, shrubs 11 percent, trees zero percent, and forbs 2 percent. Overall, DPC objectives for the vegetative community at key area FW-1 are being achieved.
>
> FW-3A: perennial grasses 56 percent, shrubs 31 percent, trees zero percent, and forbs 7 percent. Overall, DPC objectives for the vegetative community on the key area FW-3A are being achieved.

The minimum perennial canopy cover DPC objectives are established as follows: grasses 1-10 percent, shrubs 1-10 percent, trees 0-5 percent, and forbs 1-10 percent. The data collected for the RHA indicate perennial canopy cover of:

> FW-1: 73 percent grasses, 12 percent shrubs, zero percent trees, and 1 percent forbs. Overall, DPC objectives for perennial canopy cover at key area FW-1 are being achieved.
>
> FW-3A: 19 percent grasses, 16 percent shrubs, zero percent trees, and six percent forbs. Overall, DPC objectives for perennial canopy cover at key area FW-3A are being achieved.

The DPC objective for litter is a minimum 20-50 percent. Data collected for the RHA indicates litter of 52 percent at FW-1 and 35 percent at FW-3A. Overall, the DPC objective for litter on the Flying W Allotment is being achieved.

The DPC objective for bare ground is 5-10 percent. Data collected for the RHA indicates bare ground is at 3 percent at FW-1 and 10 percent FW-3A. Overall, the DPC objective for bare ground on the Flying W Allotment is being achieved.

8.0 Recommended Management Actions

Based on the determinations in *Section 7.0 Determinations of Land Health Standards*, the following management actions are recommended:

1. Continue with the current Mandatory Terms and Conditions to authorize livestock grazing on the Flying W Allotment at 432 AUMs.
2. Continue with the current Other Terms and Conditions:
   - Only cattle bearing the specified ear tags furnished by the Bureau of Land Management are authorized to graze on this allotment. As of August 21, 2006, the ear tagging Term and Condition will be placed on hold. If unauthorized use becomes a problem on the allotment, the ear tagging Term and Condition will be reinstated.
   - If in connection with allotment operations under this authorization any human remains, funerary objects, sacred objects or objects ~~or~~ of cultural patrimony as defined in the NAGPRA (PL 101-601; 104 STAT. 3048; USC 3001) are discovered, the permittee/lessee shall stop operations in the immediately area of the discovery, protect the remains and objects, and immediately notify the authorized officer of the discovery until notified by the authorized officer that operations may resume.
3. Clarify current Other Terms and Condition:
   - Placement of supplement in the form of salt block and or mineral supplement is authorized on public lands within the Flying W Allotment. In order to improve livestock distribution on the public lands, all salt blocks and/or mineral supplements will not be placed within a ¼ mile of any riparian area, wet meadow or watering facility (either permanent or temporary) unless stipulated through a written agreement or decision in accordance with 43 CFR 4130.3-2C.
   - The Permittee shall submit a report of the actual grazing use made on this allotment for the previous grazing period, March 1 to February 28. Failure to submit such a report by March 15 of the current year may result in suspension or cancellation of the grazing permit. This permit is subject to future modification as necessary to achieve compliance with the standards and guidelines (43 CFR 4180).
4. The following Other Terms and Conditions should be included as a stipulation to the grazing permit:
   - This permit is subject to future modification as necessary to achieve compliance with the standards and guidelines (43 CFR 4180).
   - Permittees shall maintain all range projects for which they have maintenance responsibilities.
   - All troughs and open top storage tanks located on BLM administered lands shall be outfitted with wildlife escape structures to provide a means of escape for animals that fall in while attempting to drink or bathe.
5. The following Other Terms and Conditions should be deleted as a stipulation to the grazing permit as it is a duplicate of the Standard Terms and Conditions associated with every BLM permit/lease:

- Grazing fee payment are due on the date specified on the billing notice, and must be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (greater of $25 of 10 percent of the amount owed but no more than $250) will be assessed.

9.0 List of Preparers

BLM Staff

RJ Estes, Rangeland Management Specialist
Dodge DiVall, Outdoor Recreation Planner
Mark McCabe, Wildlife Biologist
Dan McGrew, Archaeologist
Laura Opall, Hydrologist
Sharisse Fisher, GIS Specialist
Evan Darrah, GIS Intern
Amy Corathers, Planning & Environmental Specialist
Amelia Taylor, Assistant Field Manager - Renewables

Other Field Participants

Troy Grooms and Rick Baxter, USFS TEAMS

10.0 Consultation

Arizona Game and Fish Department
USFWS, Arizona Ecological Services
John and Kimberly Klump, Flying W Allotment permittees

11.0 Authorized Officer Concurrence

I have reviewed the determinations presented in *Section 7.0 Determinations of Land Health Standards* and the grazing and other management actions identified in *Section 8.0 Recommended Management Actions*.

X I concur with the conclusions and recommendations as written.

___ I do not concur.

___ I concur, but with the following modifications.

Scott C. Cooke 7/27/17

Scott C. Cooke
Field Office Manager

Date

References

Arizona Game and Fish Department. HabiMap™ and Heritage Data Management System. Available online at http://www.habimap.org/habimap. Accessed [06/08/2017].

Heffelfinger, J.R., C. Brewer, C. H. Alcalá-Galván, B. Hale, D. L. Weybright, B. F. Wakeling, L. H. Carpenter, and N. L. Dodd. 2006. Habitat guidelines for mule deer: southwest deserts ecoregion. Mule Deer Working Group, Western Association of Fish and Wildlife Agencies.

Krausman, P.R., Amy J. Kuenzi, Richard C. Etchberger, Kurt R, Rauthenstrauch, Leonard L. Ordway, and John J. Hervert. 1997. Diets of desert mule deer. Journal of Range Management. 50:513-522.

PRISM. 2017. PRISM Climate Group, Oregon State University. Available online at http://prism.oregonstate.edu. Accessed 4/14/2017.

USClimateData.com. Available online at www.usclimatedata.com/climate/willcox/arizona/united-states. Accessed [05/11/2017].

U.S. Department of Agriculture, Natural Resources Conservation Service. (undated). Ecological site description of R038XA104AZ. Available online at https://esis.sc.egov.usda.gov/ESDReport/fsReport.aspx?approved=yes&repType=regular&id=R038XA104AZ Accessed [05/11/2017].

_____. 2009. Ecological site description of R038XB204AZ. Available online at

https://esis.sc.egov.usda.gov/ESDReport/fsReport.aspx?approved=yes&repType=regular&id=R038XB204AZ Accessed [05/11/2017].

_____. 2009. Ecological site description of R041XC319AZ. Available online at

https://esis.sc.egov.usda.gov/ESDReport/fsReport.aspx?approved=yes&repType=regular&id=R041XC319AZ Accessed [05/11/2017].

_____. 2009. Ecological site description of R041XA109AZ. Available online at

https://esis.sc.egov.usda.gov/ESDReport/fsReport.aspx?approved=yes&repType=regular&id=R041XA109AZ Accessed [05/11/2017].

_____. 2009. Ecological site description of R041XA110AZ. Available online at

https://esis.sc.egov.usda.gov/ESDReport/fsReport.aspx?approved=yes&repType=regular&id=R041XA110AZ Accessed [05/11/2017].

_____. 2003. National range and pasture handbook. Washington, D.C.

_____. 2017. Soil Series Descriptions. Available online at https://soilseries.sc.egov.usda.gov/osdlist.aspx. Accessed [05/11/2017].

_____. 2017. Web Soil Survey. NRCS. Available oline at https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed [05/11/2017].

U.S. Department of Agriculture, Forest Service, and U.S. Department of Interior, Bureau of Land Management. 1996. Sampling vegetation attributes. Denver, CO.

U.S. Department of Interior, Bureau of Land Management. 1997. Arizona standards for rangeland health and guidelines for grazing administration. Phoenix, AZ. 164 pp.

_____. 2004. Interpreting indicators of rangeland health. Technical Reference 1734-6. Denver, CO. 122 pp.

_____. 2017. Rangeland Administration System. Available at https://www.blm.gov/ras/. Accessed [06/12/2017].

_____. 2017. Water uses and needs inventory- BLM water uses identifier information (Field Form AZ-7211-1a June 1980).

U.S. Department of Interior, Fish and Wildlife Service. 2016. Information for Planning and Conservation (IPaC). Available online at: https://ecos.fws.gov/ipac/. Accessed [06/08/2017].

U.S. Department of Interior, Fish and Wildlife Service, Arizona Ecological Services Office. 2012. Biological opinion on the [BLM] gila district livestock grazing program [#22410-2006-F-0414]. Phoenix, AZ.

U.S. Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management. 2008. Birds of conservation concern. Arlington, VA. 85 pp. [Available online at http://www.fws.gov/migratorybirds/pdf/management/BCC2008.pdf.]

U.S. Geological Survey. National Hydrography Dataset. Frequently asked questions on NHD & WBD: Original data sources. [Available online at: https://nhd.usgs.gov/Frequently+Asked+Questions+about+the+NHD+&+WBD.htm] Accessed: 7/20/2017.

Appendix A: Special Status Species

11/27/17 Update to jaguar comments denoted in underlined text below.

Federally Listed Species		
Species	**Federal Status**	**Comments**
Chiricahua Leopard Frog, *Rana chiricahuensis*	Threatened	Chiricahua Leopard Frog occurs in wetlands of the sky island regions of central and southeast Arizona. There are no natural wetlands on the Flying W Allotment and no known populations of the species at any of the man-made water sources. No effect.
Mexican Spotted Owl, *Strix occidentalis lucida*	Threatened	This species occurs in the oak woodland and mixed conifer forests of mountainous areas in southeast Arizona. There is no suitable habitat on the allotment to support Mexican spotted owl and there is no critical habitat within the allotment. No effect.
Northern Aplomado Falcon, *Falco femoralis septentrionalis*	Experimental population, non-essential	This species is listed as non-essential throughout New Mexico and Arizona. No effect.
Yellow-billed Cuckoo, western population *Coccyzus americanus*	Threatened	Yellow-billed cuckoos occur along cottonwood-willow gallery forest in riparian zones in southeast Arizona. The Flying W Allotment has no habitat considered suitable for this species. No effect.
Lesser long-nosed Bat, *Leptonycteris curasoae yerbabuenae*	Endangered	There are no known lesser long-nosed bat roosts on the Flying W Allotment. Presence of the primary forage species for this bat was not documented during the vegetation survey; however, it is likely to occur at low densities. With the low density of forage available, it is unlikely that lesser long nosed bats are regularly present in the area. No effect.
Jaguar, *Panthera onca*	Endangered	Jaguars have been recently documented in the Dos Cabezas Mountains. The habitat considered suitable for jaguars includes oak woodland and pine-oak woodland which occurs at low frequency on the allotment. No effect to designated critical habitat. The U.S. Fish and Wildlife Service (USFWS) rendered Biological Opinion (BO) on the Gila District Livestock Grazing Program #22410-2006-F-0414 (2012). This document provided the following finding and rationale: May affect, but is not likely to adversely affect, the jaguar based upon the following: 1. The proposed action is not anticipated to result in significant changes to habitat quality or quantity because the allotments will be managed to meet the standards and guidelines, which will not result in clearing of habitat, destruction of riparian areas, or fragmentation. 2. Any changes to prey habitat are likely to be localized, and not expected to significantly change prey availability throughout the areas where jaguars . . . may occur. 3. The likelihood of a jaguar occurring in the same area where predator control activities are occurring is small and it shall require identification of the target animal to species before control activities are carried out. If the identified animal is a jaguar, that individual shall not be subjected to any predator control actions." (Gila District grazing BO p. 224).
Northern Mexican Garter Snake, *Thamnophis eques megalops*	Threatened	The northern Mexican garter snake is considered a riparian obligate; there is no suitable habitat on the allotment. No effect.

Wright's Marsh Thistle, *Cirisium wrightii*	Candidate	Wright's Marsh thistle is a wetland obligate species. No suitable habitat exists on the Flying W Allotment. No effect.

Migratory Birds, Birds of Conservation Concern [1, 2]	
Black-chinned Sparrow	Black-chinned Sparrows can be found in arid brushlands on rugged mountain slopes. Little of this habitat is found on the Flying W Allotment. This species may be impacted, but impacts will be less than significant to the population.
Common Black Hawk	Common black hawk are known to occur and nest along the riparian gallery forests which do not occur on the Flying W Allotment.
Peregrine Falcon	Peregrine falcolns may use the allotment as foraging habitat. This species may be impacted, but impacts will be less than significant.
Bendire's Thrasher	Bendire's thrasher inhabits dense desert scrub areas in uplands and along drainages. The Flying W Allotment provides suitable habitat for this species. Livestock grazing on the allotment does not impact areas of dense scrub. There is no impact from grazing on this species on the Flying W Allotment
Elf Owl	No suitable habitat for this species exists on the Flying W Allotment.
Elegant Trogon	No suitable habitat for this species exists on the Flying W Allotment.
Northern Beardless-Tyrannulet	Northern beardless tyrannulets are primarily associated with riparian areas, but are known to occur in dense vegetation in drier drainages. The species could occur in vegetation thickets in drainages on the allotment. Livestock use of the Flying W Allotment does not impact the mesquite and other shrub/small tree thickets on the allotment. There will be no impact to the species.
Bell's Vireo	Bell's vireo are primarily associated with riparian areas, but are known to occur in dense vegetation in drier drainages. The species could occur in vegetation thickets in drainages on the allotment Livestock use of the Flying W Allotment does not impact the mesquite and other shrub/small tree thickets on the allotment. There will be no impact to the species.
Gray Vireo	Gray vireos are typically found in open pinyon/juniper and chaparral habitats. The Flying W Allotment does not contain suitable habitat for the species. There will be no impact to the species.
Phainopepla	Phainopepla are strongly associated with mesquite. Livestock grazing on the Flying W Allotment does not impact the established mesquite on the allotment. There will be no impact to the species.
Lucy's Warbler	Lucy's warblers are associated with riparian areas and intermittently flood areas containing mesquite. There will be no impact from livestock grazing on Lucy's warbler.
Yellow Warbler (*sonorana* ssp.)	Yellow warblers are found in cottonwood willow dominated riparian areas. There will be no impacts to the species from livestock grazing on the allotment.
Black-throated Gray Warbler	Black-throated gray warblers inhabit open woodland areas. The Flying W Allotment does not provide habitat for this species. There will be no impact to the species.
Grace's Warbler	Grace's warbler inhabit pine forests. The Flying W A llotment does not contain habitat for this species. There will be no impact to the species.
Red-faced Warbler	Red-faces warblers inhabit high elevation forest. The Flying W Allotment does not contain habitat for this species. There will be no impact to the species.
Canyon Towhee	Canyon towhee inhabits dense desert scrub areas in uplands and along drainages. The Flying W Allotment provides suitable habitat for this species. Livestock grazing on the allotment does not impact areas of dense scrub. There is no impact from grazing on this species on the Flying W Allotment.

[1]The migratory birds species listed are species of particular conservation concern (e.g. Birds of Conservation Concern) that may occur on or near the allotment. It is not a list of every bird species that may be found in this location, nor a guarantee that all of the bird species on this list will be found on or near this location.

[2] Habitat information and determinations compiled from species profiles found on USFWS website. https://ecos.fws.gov

Western Burrowing Owl	Burrowing owls generally inhabit gently-sloping areas, characterized by low, sparse vegetation, associated with high densities of burrowing animals. Due to the lack of available burrowing sites, it is unlikely that there are burrowing owls on the Flying W. There will be no impact to the species.
Chestnut-collared Longspur	Chestnut-collared longspur migrate through the area. At most Individuals may rest for short periods of time on the allotment. There is no impact to this species from livestock grazing.
Loggerhead Shrike	Loggerhead Shrikes inhabit open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns. This species may be impacted, but impacts will be less than significant to the population.

BLM Sensitive Species	
Amphibians	
There are no BLM sensitive amphibians known to occur in the Flying W Allotment.	
Birds	
American Peregrine Falcon, *Falco peregrinus anatum*	There are no known peregrine eryies in the area and species occurrences in the area have not been documented on the Arizona Game and Fish Department HDMS database.
Arizona Botteri's Sparrow, *Peucaea botterii*	Little suitable habitat for this species exists on the Flying W Allotment.
Bald Eagle (wintering), *Haliaeetus leucocephalus*	Wintering bald eagles occur along the Gila River over 20 miles away. No suitable nesting habitat exists on the Flying W Allotment.
Golden Eagle, *Aquila chrysaetos*	There is no suitable nesting habitat for golden eagles on the Flying W Allotment. Golden eagles fly and hunt over the areas of the allotment. There are no known impacts of livestock on golden eagles.
Ferruginous Hawk *Buteo regalis*	There is no suitable nesting habitat for ferruginous hawks on the Flying W Allotment. Ferruginous hawks fly and hunt over the areas of the allotment. There are no known impacts of livestock on ferruginous hawks.
Western Burrowing Owl, *Athene cunicularia*	Although identified as a possibly occurring in the area by the IPAC search, t here are no known occurrences and the soil and terrain are not conducive to the species occurrence.
Fish	
No suitable aquatic habitat exists on the Flying W Allotment to support fish species.	
Invertebrates	
Hydrobiid Spring Snails, All species in the genus	Hydrobiid spring snails occur in springs and other perennial waters. Hydrobiid spring snails have not been documented on the Flying W Allotment. There are no springs or perennial flows on the allotment.
Succineid Snails, All species in the family	Succineid snails occur in springs and other perennial waters. Succineid snails have not been documented on the Flying W Allotment. There are no springs or perennial flows on the allotment.
Mammals	
Bats, order Chiroptera	Six species of BLM sensitive bats were listed as potentially occurring within the allotment boundary. There are no known roosting caves or mines on the allotment. Grazing will not affect the ability of bats to forage in the area.
Reptiles	
Arizona Striped Whiptail, *Aspidoscelis arizonae*	Identified in the HDMS database as occurring in the area, but the location is outside of the species accepted range and not in appropriate habitat.
Plants	

BLM Sensitive Species
There are no BLM sensitive plants known to occur in the Flying W Allotment.

Appendix B: USFS TEAMS Monitoring Data 2014

A comparison between conditions described in the ESD (R038XA104AZ) (NRCS, 2005) and current conditions of key management area FW-1 and FW-3A. Soil cover components include: plants (including basal cover), biological crusts, litter, surface fragments, rock, and bare ground.

	Basal Cover				Non-Vascular Plants	Biological Crust	Litter	Surface Fragments > ¼" & <= 3"	Surface Fragments > 3"	Bedrock	Water	Bare Ground
	Grass/ Grasslike	Forb	Shrub/ Vine	Tree								
ESD	2 to 5	1 to 2	1 to 2	0 to 1		0 to 1	20 to 50	25 to 50	1 to 15	1 to 15	0 to 0	10 to 50
FW-1	13	0	1	0	0	0	51.5	23.8	47.5	0 to 0	0 to 0	3
FW-3A	5	1	1	0	2	0	35	39.6	9.9	0	0	9.9

Foliar cover of species recorded in the LPI plot for key area FW-1 in January 2014.

Key area information		Species
Trend Plot 1 *Flying W Allotment*		*Annual forbs*
Range site: R038XA104AZ		*Acacia greggii*
		Bouteloua barbata
		Bouteloua chondrosioides
		Bouteloua curtipendula
		Bouteloua eriopoda
		Eragrostis lehmanniana
		Urochloa arizonica
		Perennial forbs
		Sphaeralcea ambigua
		Sporobolus
Cover/Bare Ground		
Foliar Cover	76.2%	
Basal Cover	13.9%	
Bare Ground	3%	

Foliar cover of species recorded in the LPI plot for key area FW-3A in January 2014.

Key area information		Species
Trend Plot 3 *Flying W Allotment*		*Annual forbs*
Range site: R038XA104AZ		*Acacia constricta*
		Acacia greggii
		Aristida
		Bouteloua eriopoda
		Bouteloua rothrockii
		Dasyochloa pulchella
		Eragrostis lehmanniana
		Gutierrezia sarothrae
		Pleuraphis mutica
		Yucca
Cover/Bare Ground		
Foliar Cover	36.6%	
Basal Cover	8.9%	
Bare Ground	9.9%	

A comparison between the state and transition model in the ESD and the LPI data collected in January 2014 at FW-1 and FW-3A.

State in Transition of HCPC Site as described by the ESD	**DPC Objectives for Minimum Perennial Canopy Cover**	**LPI Data FW-1**	**LPI Data FW-3A**
Perennial grasses 10-20% Canopy Cover	Perennial grasses 1-10%	BOBA2 – 3% Canopy BOCH- 4% BOCU – 3% BOER4 – 13% ERLE – 37% URAR – 22% SPORO – 1%	BOER4- 12% DAPU7 – 2% ERLE – 3% PLUM3 – 2%
Annual grasses/forbs 5-15% Canopy Cover	forbs 1-10%	Annual forbs – 1%	Aristida – 2% BORO2 – 2% Annual forbs – 2%
Shrubs, succulents 20 to 30%	Shrubs 1-10%	ACGR -11% Canopy cover SPAM – 1%	GUSA2 – 1% YUCCA – 3% ACCO2 – 2% ACGR – 10%

Species composition based at FW-1 and FW-3A

DPC Objectives for Vegtative Community Composition	**LPI Data FW-1**	**LPI Data FW-3A**
Perennial Grasses minimum 20-30% Composition	BOCH - 4% BOCU - 3% BOER4 - 13% ERLE - 38% PAAR - 22% SPORO - 1%	ARIST - 5% BOER4 - 29% BORO2- 5% DAPU7- 5% ERLE - 7% PLMU3 - 5%
	Total - 81%	Total - 56%
Shrubs maximum 25-30% Composition	ACGR - 11%	VACO9 - 5% ACGR - 24% GUSA2 - 2%
	Total - 11%	Total - 31%
Trees maximum 0-5% Composition	0%	0%
	Total - 0%	Total - 0%
Forbs minimum 5-10% Composition	PPFF - 1% SPAM - 1%	YUCCA - 7%
	Total - 2%	Total - 7%

Functional/structural plant groups at FW-1.

Ranking	Species List (by code) for Functional/Structural Groups at FW-1
D	ERLE
S	ACCO2
S	ACGR
S	OPPO
M	PRVE
M	EAER
M	BOBA3
M	BOCU
M	BOER4
M	URAR
M	ANNNUAL FORBS
M	PLMU3
M	MIBI3
M	DAPU7
M	GUSA2
T	BOBA2, ALWR, CHOLLA, BOCH ,YUCCA, FEWI, ARISTIDA SP., SOEL,SETERIA,SPORO,BORO2

Dominant (D) roughly 40-100% composition, Sub-dominant (S) roughly 10-40% composition, Minor Composition (M) roughly 2-5% composition, or Trace (T) roughly <2% composition.

Functional/structural plant groups at FW-3A.

Ranking	Species List for Functional/Structural Groups at SP-3
D	BOER4
S	ERLE
S	PLMU3
M	GUSA2
M	YUCCA
M	CAER
M	ACGR
M	OPPUNTIA SP.
M	ARISTIDA SP.
M	DAPU7
M	SPICEBUSH
T	PAAR,BOCU,

Dominant (D) roughly 40-100% composition, Sub-domin ant (S) roughly 10-40% composition, Minor Composition (M) roughly 2-5% composition, or Trace (T) roughly <2% composition.

Appendix C: Interested Public

Western Watersheds Project
c/o Greta Anderson
738 N. 5th Avenue, Suite 200
Tucson, Arizona 85705

Habitat Program Manager
c/o John Windes
Arizona Game and Fish Department
555 North Greasewood Road
Tucson, Arizona 85745

Arizona Game and Fish Department
WMHB – Project Evaluation Program
5000 W. Carefree Highway
Phoenix, Arizona 85086-5000

Arizona State Land Department
c/o Ronnie Tsosie
1616 West Adams
Phoenix, Arizona 85007

Arizona Cattle Growers
1401 North 24th Street
Phoenix, Arizona 85008

Larry Humphrey
P. O. Box 894
Pima, Arizona 85543