U. S. AIR FORCE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

Schriever Air Force Base

(See INRMP signature pages for plan approval date)

ABOUT THIS PLAN

This installation-specific Environmental Management Plan (EMP) is based on the U.S. Air Force's (AF) standardized Integrated Natural Resources Management Plan (INRMP) template. This INRMP has been developed in cooperation with applicable stakeholders, which may include Sikes Act cooperating agencies and/or local equivalents, to document how natural resources will be managed. Non-U.S. territories will comply with applicable Final Governing Standards (FGS). Where applicable, external resources, including Air Force Instructions (AFIs); AF Playbooks; federal, state, local, FGS, biological opinion and permit requirements, are referenced.

Certain sections of this INRMP begin with standardized, AF-wide "common text" language that address AF and Department of Defense (DoD) policy and federal requirements. This common text language is restricted from editing to ensure that it remains standard throughout all plans. Immediately following the AF-wide common text sections are installation sections. The installation sections contain installation-specific content to address local and/or installation-specific requirements. Installation sections are unrestricted and are maintained and updated by AF environmental Installation Support Teams (ISTs) and/or installation personnel.

NOTE: The terms 'Natural Resources Manager', 'NRM' and 'NRM/POC' are used throughout this document to refer to the installation person responsible for the natural resources program, regardless of whether this person meets the qualifications within the definition of a natural resources management professional in DODI 4715.03.

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DOCUMENT CONTROL

Record of Review – The INRMP is updated not less than annually, or as changes to natural resource management and conservation practices occur, including those driven by changes in applicable regulations. In accordance with (IAW) the Sikes Act and AFI 32-7064, *Natural Resources Management*, the INRMP is required to be reviewed for operation and effect not less than every five years. Annual reviews and updates are accomplished by the base Natural Resources Manager (NRM), and/or an Installation Support Team Natural Resources Media Manager. The installation shall establish and maintain regular communications with the appropriate federal and state agencies. At a minimum, the installation NRM (with assistance as appropriate from the NR Media Manager) conducts an annual review of the INRMP in coordination with internal stakeholders and local representatives of the United States Fish and Wildlife Service (USFWS), state fish and wildlife agency, and National Oceanic and Atmospheric Administration (NOAA) Fisheries, where applicable, and accomplishes pertinent updates. Installations will document the findings of the annual review in an Annual INRMP Review Summary. By signature to the Annual INRMP Review Summary, the collaborating agency representative asserts concurrence with the findings. Any agreed updates are then made to the document, at a minimum updating the work plans.

INRMP APPROVAL/SIGNATURE PAGE

<Will insert once signed>

EXECUTIVE SUMMARY

This document outlines a long-term plan for Schriever Air Force Base (AFB) to manage natural resources in compliance with relevant statutes, executive orders, Presidential memoranda, Department of Defense (DoD) and Air Force-specific requirements. The Integrated Natural Resources Management Plan (INRMP) is a component of the Installation Development Plan (IDP), and it serves as the Wing Commander's decision document for natural resources management actions and associated compliance procedures. The INRMP integrates the base's natural resources management program with ongoing mission activities to conserve and protect natural resources in support of the military mission for present and future generations.

Schriever AFB is committed to a proactive management strategy focused on an ecosystem-based approach to natural resources management, including the protection and conservation of wildlife, habitat, and the surrounding watershed. The INRMP outlines a plan to implement this strategy by identifying the following: (1) the military mission and its potential effects on natural resources; (2) baseline information on the physical and biotic environment; (3) recommended goals, objectives, and projects for key natural resource management areas; (4) personnel, funding, and support required for implementation of the INRMP and the recommended projects; and (5) opportunities for consultation with stakeholders in the implementation process. The INRMP supports the military mission at Schriever AFB primarily through two means: (1) ensuring compliance with statutory regulations, executive orders, and various DoD and AF regulations and instructions, thus avoiding delays to the mission and/or penalties being placed upon the installation; and (2) employing on-the-ground management strategies that directly and positively support the mission, such as removing invasive plant or animal species that may negatively impact the mission or the Schriever AFB workforce.

Key natural resource management issues at Schriever AFB include management of black-tailed prairie dog (*Cynomys ludovicianus*) populations to avoid interference with mission activities yet sustain burrowing owl (*Athene cunicularia*) populations, protection of sensitive plants and plant communities as key components of the ecosystem, and noxious weed control. Management goals and objectives to address these issues have been defined based on regulatory requirements and projected trends. Projects that directly link to management objectives are identified and a schedule is provided to aid planning for resource allocation.

The Schriever AFB Natural Resources Management Program goals, as outlined in Section 8, are as follows:

- Keep Schriever AFB INRMP current through annual updates and by monitoring the installation's biotic resources
- Control native and non-native invasive species as needed, primarily black-tailed prairie dogs and noxious weeds

This INRMP details the steps needed to fulfill all compliance requirements related to natural at Schriever AFB. Full compliance and sound environmental stewardship are dependent on implementation of the INRMP through the appropriation of funds for the recommended projects summarized in this plan. Annual reviews with the U.S. Fish and Wildlife Service (USFWS) and Colorado Parks and Wildlife (CPW) will ensure that the INRMP remains current and relevant.

1.0 OVERVIEW AND SCOPE

This INRMP was developed to provide for effective management and protection of natural resources. It summarizes the natural resources present on the installation and outlines strategies to adequately manage those resources. Natural resources are valuable assets of the United States Air Force. They provide the natural infrastructure needed for testing weapons and technology, as well as for training military personnel for deployment. Sound management of natural resources increases the effectiveness of Air Force adaptability in all environments. The Air Force has stewardship responsibility over the physical lands on which installations are located to ensure all natural resources are properly conserved, protected, and used in sustainable ways. The primary objective of the Air Force natural resources program is to sustain, restore and modernize natural infrastructure to ensure operational capability and no net loss in the capability of AF lands to support the military mission of the installation. The plan outlines and assigns responsibilities for the management of natural resources, discusses related concerns, and provides program management elements that will help to maintain or improve the natural resources within the context of the installation's mission. The INRMP is intended for use by all installation personnel. The Sikes Act is the legal driver for the INRMP.

1.1 Purpose and Scope

The purpose of this INRMP is to provide a comprehensive guide for protection, management and development of Schriever AFB's natural resources and a means of coordinating natural resources management with other elements of the base IDP. The INRMP is based on an interdisciplinary approach to ecosystem management that allows for sustainable use of Schriever AFB in support of its military mission. This INRMP is a revision to the 2015 INRMP. Henceforth, the INRMP will be maintained and updated as needed on an annual cycle.

As identified in the Sikes Act Improvement Act (SAIA), INRMPs must address the following: (1) conservation and rehabilitation of natural resources on military installations; (2) sustainable multipurpose use of the resources to include hunting, fishing, trapping, and non-consumptive uses; (3) fish and wildlife management, land management, forest management, and fish- and wildlife-oriented recreation; (4) fish and wildlife habitat enhancement or modifications; (5) wetland protection, enhancement, and restoration, where necessary for support of fish, wildlife or plants; (6) integration of and consistency among, the various activities conducted under the plan; (7) establishment of specific natural resource management goals and objectives and timeframes for proposed action; (8) sustainable use by the public of natural resources to the extent that the use is consistent with the needs of fish and wildlife resources; (9) public access to the military installation that is necessary or appropriate subject to the requirements necessary to ensure safety and military security; (10) enforcement of applicable natural resource laws (including regulations); and (11) no net loss in the capability of military installation lands to support the military mission. Due to security restrictions at Schriever AFB, public access is not feasible; however, multipurpose use by base personnel is discussed in this plan.

This INRMP outlines the steps needed to fulfill compliance requirements related to natural resources management and to provide for environmental stewardship at Schriever AFB. This document is organized into five principal sections: (1) current status and conditions of the natural resources; (2) potential impacts on natural resources; (3) key natural resource management areas to be addressed based on projected trends; (4) management recommendations that incorporate goals and objectives; and (5) specific activities for effective implementation of the INRMP. The scope of this INRMP addresses natural resources management for the entire installation, in both developed and undeveloped areas of the installation.

1.2 Management Philosophy

Approximately 20 percent of the property at Schriever AFB has been developed in support of the military mission. The remaining 80 percent is used as a buffer for security of sensitive areas, separation between areas that have undesirable functional relationships, and reserves for future development. Management and protection of natural resources on these lands are essential to the long-term sustainability of the land and its ability to support mission requirements.

This INRMP presents broad guidance as well as specific goals, objectives, and projects for management of the natural resources. Concepts used in development of the INRMP include:

- Sustainable use of military lands: This concept is achieved through programs that integrate mission requirements for land use with sound natural resources management.
- Natural resources stewardship of the Air Forces: This concept involves the management of natural resources with a goal of maintaining or increasing their value for present and future generations. Multiple uses may include, but are not limited to, mission activities, wildlife management, agricultural out leasing, aesthetics, and preservation of the soil, vegetation, water resources, and native flora and fauna.
- Biodiversity: This concept is the variety of life and its processes, including indigenous ecological communities, native species and their associations, as well as ecosystem functions such as predation, grazing, and nutrient cycling. Biodiversity is best measured or defined in terms of the variety of ecosystems and the variety of natural functions that occur within and among these ecosystems, rather than simply by the number of species present. Protecting and enhancing biodiversity is an overall goal of the Air Force. Management for maximum biodiversity helps to ensure ecosystem health and resilience, which in turn ensures sustainable use of Air Force lands to accomplish military missions.
- Ecosystem management: This concept is the tool that the Air Force uses to protect and enhance biodiversity and achieve sustainable land use. This approach considers natural resources at an ecosystem level, rather than at the single species level. The quality, integrity and connectivity of the ecosystem is the overall goal of this approach, and it is assumed that, within this broader scheme, individual species will prosper. Rare species are important components of ecosystems and biodiversity as they are often provided legal protection; therefore, they must be considered during project planning.

This INRMP explains how to manage natural resources at Schriever AFB in compliance with federal, state and local regulations as well as in support of environmental stewardship. This plan is dynamic in that goals and objectives will be monitored on a continuous basis and management strategies updated whenever there are changes in the mission requirements, adverse effects observed in the management of the natural resources, or changes in regulations governing management of natural resources. Goals and objectives must be considered early in the planning process, as they will not be fully realized without requested appropriations. Resources required to implement this plan are included in the Future Year Defense Program (FYDP). The projects presented in this INRMP are prioritized in consideration of the fact that the funding received is often less than requested and necessary for implementation of all projects. Work plans that provide time frames for project implementation are provided in Section 10. This plan also provides information for preparation and review of Air Force Forms 332 or 813 that affect natural resources management.

The Schriever AFB INRMP is subject to a rigorous review process by Schriever AFB internal directorates, who provide input relative to their respective areas of expertise. This coordination process not only corrects

errors and resolves potential misconceptions, but also integrates this plan with other management policies and plans.

1.3 Authority

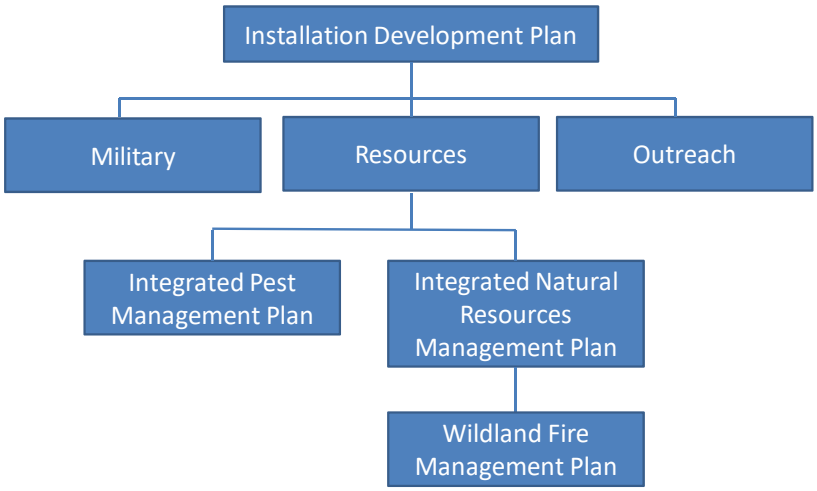
This INRMP was developed in cooperation with the USFWS and CPW, fulfilling compliance with the Sikes Act (16 U.S.C. 670a et seq.) as amended by the SAIA of 1997. Furthermore, this INRMP facilitates compliance with federal and military regulatory and statutory requirements that encompass the analysis of potential environmental impacts, water and air quality, threatened and endangered species (TES), and migratory birds and other wildlife.

The INRMP presented herein, was prepared under the authority of Department of Defense Instruction (DoDI) 4715.03, Natural Resources Conservation Program (March 18, 2011); Air Force Policy Directive (AFPD) 32-70, Environmental Quality (July 20, 1994); and Air Force Instruction (AFI) 32-7064, Integrated Natural Resources Management (November 18, 2014).

Installation-Specific Policies (including State and/or Local Laws and Regulations)	
Not Applicable	

1.4 Integration with Other Plans

Guiding future development at Schriever AFB is the "Vision 2020" development concept (i.e. base IDP). This INRMP supports the natural resources component of this vision by integrating all aspects of natural resources management with each other and with the base's military mission as well as by establishing goals and objectives. The figure below, Relationship between Base Management Plans, depicts the relationship among the various management plans on Schriever AFB, and how they jointly support the INRMP and IDP.



Relationship between Base Management Plans

2.0 INSTALLATION PROFILE

Office of Primary Responsibility	The Chief of Environmental Flight, 50 CES, has overall responsibility for implementing the Natural Resources Management program and is the lead organization for monitoring compliance with applicable federal, state and local regulations
Natural Resources Manager/POC	William "Charlie" Lawton (719) 567-3361 william.lawton.4@us.af.mil
State and/or local regulatory POCs (For US-bases, include agency name for Sikes Act cooperating agencies)	Colorado Parks and Wildlife
Total acreage managed by installation	3,840
Total acreage of wetlands	0
Total acreage of forested land	0
Does installation have any Biological Opinions? (If yes, list title and date, and identify where they are maintained)	No
NR Program Applicability (Place a checkmark next to each program that must be implemented at the installation. Document applicability and current management practices in Section 7.0)	☑ Invasive species ☐ Wetlands Protection Program ☑ Grounds Maintenance Contract/SOW ☐ Forest Management Program ☑ Wildland Fire Management Program ☐ Agricultural Outleasing Program ☑ Integrated Pest Management Program ☐ Bird/Wildlife Aircraft Strike Hazard (BASH) Program ☐ Coastal Zones/Marine Resources Management Program ☑ Cultural Resources Management Program

2.1 Installation Overview

2.1.1 Location and Area

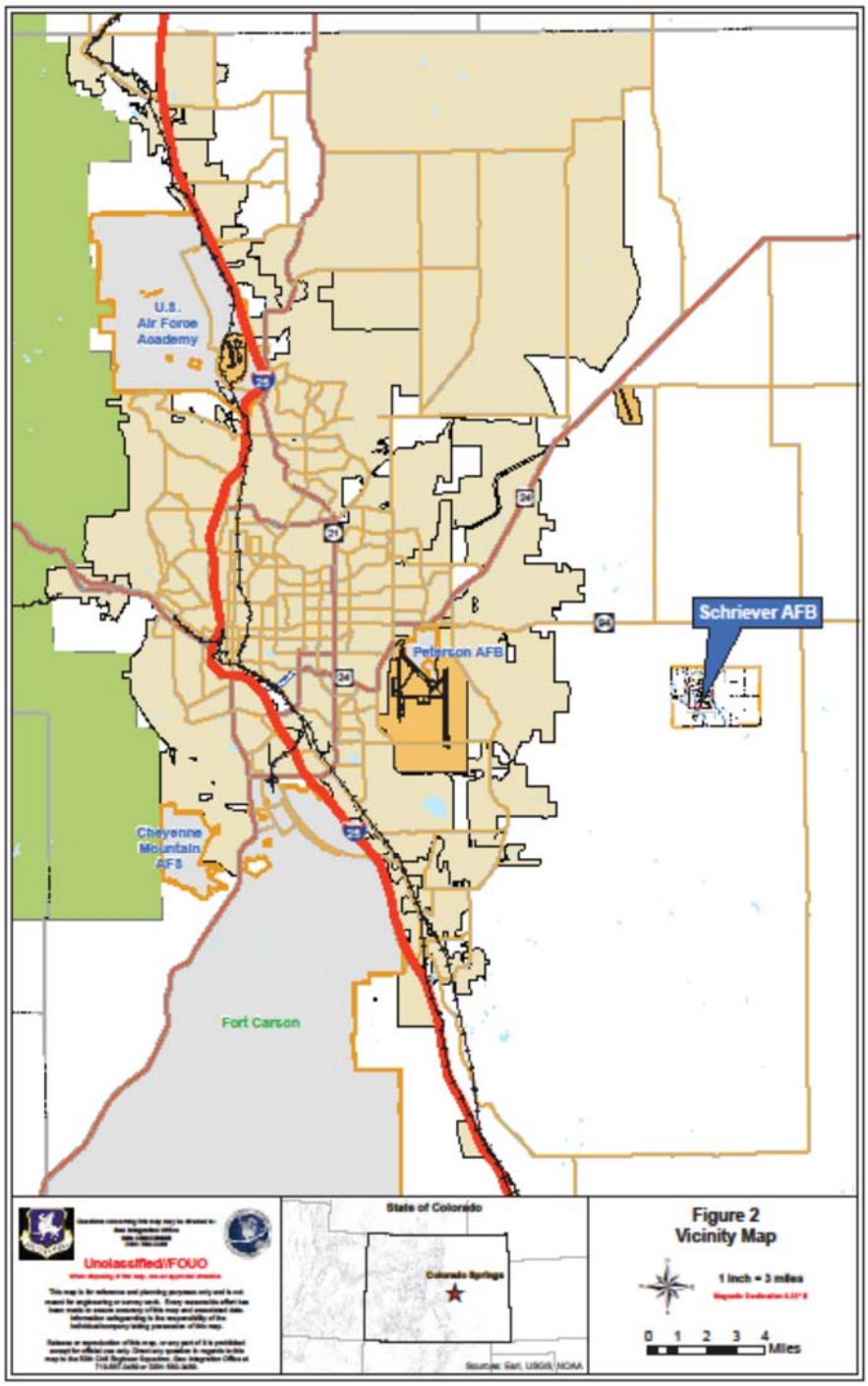
Location

Schriever AFB occupies 3,840 acres in central El Paso County, Colorado. The centrally located mission-essential Restricted Area (RA) comprises approximately 365 acres, while the surrounding buffer zone, which includes ancillary facilities, the residential area, and considerable open space, is approximately 3,475 acres in size. The installation is situated 10 miles east of Peterson AFB and approximately 16 miles east of downtown Colorado Springs as shown in the figure Vicinity Map. Highway 94 provides primary access to the base.

Area

El Paso County lies in east central Colorado and encompasses more than 2,158 square miles. Colorado Springs, the largest community in El Paso County, is located on the eastern boundary of the Rocky Mountains. To the south is the Arkansas River valley with its agricultural lands and the town of Pueblo. To the north lies the Denver metropolitan area. The location of Schriever Air Force Base places it at the

eastern edge of the distribution for many species that are predominantly found further west, and on the western edge of the distribution for many species are predominantly found further east. This provides many opportunities and challenges from a natural resource management perspective.



Vicinity Map

Installation/GSU Location and Area Descriptions

Base/GSU Name	Main Use/Mission	Acreage	Addressed in INRMP?	Describe NR Implications
Kaena Point Satellite Tracking Station(KPSTS)	Detachment 3, 21st Space Operations Squadron executes on-demand, real-time command and control sorties for launch and operation of over 150 Department of Defense, allied, and civil space systems as part of the Air Force Satellite Control Network. Detachment 3, 21st Space Operations Squadron also provides facilities maintenance, communications, utilities, and other base support services to various tenants on the installation.	153	N/A - KPSTS has its own INRMP.	No NR implications for Schriever AFB.
New Boston Air Force Station(NBAFS)	23rd Space Operations Squadron provides Assured Access to Space Through Operations and Maintenance of Satellite Command and Control Systems.	2,829	N/A – NBAFS has its own INRMP.	No NR implications for Schriever AFB.

2.1.2 Installation History

On 8 July 1985 Falcon Air Force Station was activated and located on 640 acres of land leased from the State of Colorado. In 1987, the Air Force took action to extend Falcon Air Force Station boundaries one-half mile to the north, one-half mile west, one-half mile south and one and one-half miles east. The purpose of the purchase was to create a buffer zone around the base to control incompatible construction that would interfere with the transmission/reception of satellite communications, provide additional security for sensitive areas and support future mission growth. Prior to construction of the base, the land was used for livestock grazing and contained three private farm homesteads. The condition of the undeveloped lands on base is essentially the same today as when the land was purchased from the private landowners.

The Air Force re-designated Falcon Air Force Station as Falcon AFB on June 13, 1988 and in June 1998, Falcon AFB was renamed Schriever AFB. The installation is continuously growing and being developed through groundbreaking projects to include new buildings and recreation areas.

2.1.3 Military Missions

Schriever AFB, along with seven other major installations, is assigned to the United States Space Force (USSF) as of 20 December 2019. USSF is the newest and sixth branch of the US armed forces, responsible for the organization, training, and equipping of space forces in order to protect U.S. and allied interests in space and to provide space capabilities to the joint force. USSF responsibilities include developing military space professionals, acquiring military space systems, maturing the military doctrine for space power, and organizing space forces. USSF directs and manages the daily operations of DoD communications, meteorological, navigation, and early missile warning satellites through the Satellite Operations.

The 50th Space Wing, a component of USSF, is the current host unit at Schriever AFB; the installation currently remains a US Air Force base but may be reassigned and renamed as USSF is stood up. The Wing provides command and control of operational DoD satellite systems. The wing operates satellite operation centers at Schriever AFB and remote tracking stations and other command and control facilities around the world. These facilities monitor satellites during launch, operate satellites while they are in orbit and fix satellite anomalies when they occur.

The responsibilities of the 50th Space Wing are accomplished by the 50th Operations Group, 50th Network Operations Group and 50th Mission Support Group.

- The 50th Operations Group commands and controls assigned operational DoD satellite systems, trains space operations crews, and provides operational support and evaluation functions for management of satellite control centers and assigned ground stations. The group is composed of six squadrons.
- The 50th Network Operations Group manages and executes the 50th Space Wing's responsibilities for logistics, maintenance activities and communications-computer resources in support of USSF's space operations mission. The group is composed of five squadrons, six detachments, and the Program Management Office.
- The 50th Mission Support Group operates and maintains Schriever AFB, with responsibility for maintaining base security, providing civil engineering, force support, contracting guidance and policy and general activities support.

Schriever AFB is also home to the U.S. Air Force Warfare Center, Missile Defense Agency's Joint National Integration Center and the 310th Space Wing that support the mission of the 50th Space Wing. The base population is around 7,058058, including military personnel, DoD civilians and contractors (Schriever Air Force Base 2018).8

Listing of Tenants and NR Responsibility

Tenant Organization	NR Responsibility
310th Space Wing	*50 CES CEIE*
Missile Defense Integration and Operations Center	*50 CES CEIE*
Space Innovation and Development Center	*50 CES CEIE*
Joint Functional Component Command	*50 CES CEIE*
Army and Air Force Exchange Service	*50 CES CEIE*

2.1.4 Surrounding Communities

Several communities are located near Schriever AFB. Colorado Springs is the largest with an estimated 2019 population of 472,688, up from 416,427 in 2010 (US Census Bureau 2020). Other neighboring communities within a 10-mile radius are relatively small and include Ellicott, Falcon and Security-Widefield. The estimated 2019 population of El Paso County is 713,856, up from 622,263 in 2010 (US Census Bureau 2020). The estimated 2019 population of El Paso County is 713,856, up from 622,263 in 2010.

The Colorado Springs area is home to Schriever AFB, Peterson AFB and Cheyenne Mountain Air Force Station. Along with the U.S. Air Force Academy and U.S. Army Fort Carson, these installations contribute significantly to the local economy and, combined, account for more than 35,000 employees.

The area surrounding Schriever AFB contains almost exclusively agricultural activities. Cattle grazing occurs on many of the larger parcels surrounding the installation. Some residential development is also scattered throughout the area on 2½-, 5-, and 35-acre lots. No incompatible development currently exists in the areas surrounding the installation.

The Air Force negotiated restrictive height easements with several surrounding land owners to protect antenna "look angles" and prevent Radio Frequency (RF) interference. From 1987 to 1991, eight easements were obtained for parcels surrounding Schriever AFB to the north and west. No buildings, structures, overhead power lines, vegetation or other obstructions over 45 feet above ground level shall be allowed in perpetuity for these parcels (Schriever Air Force Base 2016).

2.1.5 Local and Regional Natural Areas

Local and regional natural areas can increase natural resources management options at military installations. The only park and natural area located within 5 miles of Schriever AFB is Corral Bluffs Open Space. Corral Bluffs is a 700+ acre open space operated under the purview of Colorado Springs Parks, Recreation, and Cultural Services. It is also designated by the State of Colorado as a Colorado Natural Area and is a globally important paleontological site. Golden Eagles nest on Corral Bluffs, and these eagles likely forage on Schriever AFB during various times of the year. Recent discoveries of exceptionally significant Tertiary-era fossils at the Corral Bluffs Open Space mean the area will not be developed for recreational activities for the foreseeable future. The next-closest parks, reservoirs, streams, and natural resource areas of interest are located in Colorado Springs and Pikes Peak National Forest, west of Colorado Springs.

2.2 Physical Environment

2.2.1 Climate

El Paso County's climate is influenced by the high elevations of the Front Range of the Rocky Mountains to the west, resulting in warm, sunny summers and cold, dry, low-humidity winters. January and December are the coldest months, with average highs of about 30ºF and average lows of about 18ºF. July, the hottest month, has an average high of about 85ºF and an average low of about 57ºF.

Annual precipitation averages 16.5 inches, with approximately 85 percent of the precipitation occurring between April and September during the growing season. The wettest and driest months are August and January, respectively. August averages 3.34 inches of precipitation and January averages 0.32 inches of precipitation. Yearly snowfall averages approximately 38 inches. Large snowdrifts may occur when snow is accompanied by wind.

Approaching winter storms generally move either from north to south or from west to east. Severe thunderstorms occur from May through August along the Front Range and can result in flash flood conditions (greatest potential in July and August) and occasional tornadoes (peak in June). Lightning from such storms as well as human activity are the primary causes of wildfire. The wildland fire season lasts from April through October, although fires can occur whenever snow is absent.

In future years, temperature and precipitation regimes in the region are expected to diverge from historical norms as a result of climate change, resulting in changes to ecosystem structure, diversity and function. This could affect the native natural resources found in and around Schriever AFB. In an on-going post-grazing habitat monitoring study conducted by Colorado Natural Heritage Program (CNHP) on U.S. Army Pueblo Chemical Depot, it was found that drought significantly impacted blue grama (*Chondrosum gracile*), the dominant native grass species in the area (Rondeau et al. 2016). In addition, the effects of drought on blue grama appeared to be compounded when the grass was also influenced by the presence of prairie dogs. Additionally, a long-term study of the effects of longer, warmer growing seasons on Front Range grasslands suggest the emergence of locally novel ecological niches favorable to invasive nonnative species, particularly in wetter areas and years (Lawton et al 2010). It is difficult at this time to assess the full effects of climate change on floral and faunal communities on Schriever AFB; it is reasonable to expect climate change to exacerbate management challenges, particularly invasive species and wildland fire risks.

Climate data for the Schriever AFB area can be found in the table below, Schriever AFB Area Climate Data.

Schriever AFB Area Climate Data

Month	Temperature[1]			Precipitation[2]	Snowfall[2]
	High	Low	Average		
January	43.2	17.7	30.5	0.32	5.6
February	44.8	19.5	32.1	0.34	4.9
March	52.1	26.0	39.1	1.00	8.1
April	59.8	33.3	46.5	1.42	4.9
May	69.1	42.7	55.9	2.03	0.7
June	79.0	51.3	65.1	2.50	0
July	84.8	56.9	70.9	2.84	0
August	81.6	55.7	68.7	3.34	0
September	74.5	47.3	60.9	1.19	0.2
October	63.0	35.8	49.4	0.82	2.9
November	51.0	25.2	38.1	0.40	4.7
December	42.1	17.5	29.8	0.34	5.7
ANNUAL	62.2	35.8	49.0	16.54	37.7

Source: http://www.crh.noaa.gov/pub/?n=/climate/cli/coloradosprings.php

[1]Temperature in degrees Fahrenheit
[2]Precipitation and snowfall in inches

2.2.2 Landforms

Schriever AFB is located at an elevation of approximately 6,200 feet above mean sea level and is situated on the western edge of the Denver Basin geologic formation. The underlying sediments consist of unconsolidated deposits eroded from the Rocky Mountains. The area is composed of sandy foothills and plains of low relief and is identified as the high plains of the Colorado Piedmont of the Great Plains Physiographic Province. The region is characterized by rolling grasslands that terminate at the eastern edge of the central Rocky Mountains. The topography of Schriever AFB is typical of high plains prairies, with broad, shallow drainages generally trending southeast towards the Arkansas River, separated by rolling uplands.

Geologic hazards, such as landslide-prone slopes or active faults, are not known to exist in the vicinity of the base. Therefore, there is low to nonexistent risk of major damage from mass ground movement or seismic activity. In addition, mineral resources are not known to exist in the area (EDAW 1992) and would not likely be encountered during further development of the base.

The most important topographic factor influencing base development are slopes greater than 10 percent. Undisturbed, naturally occurring areas of more than 10-percent slope are a constraint to facility

development and are subject to severe soil erosion. Only small areas along a few drainages on the base have slopes steeper than 10 percent.

2.2.3 Geology and Soils

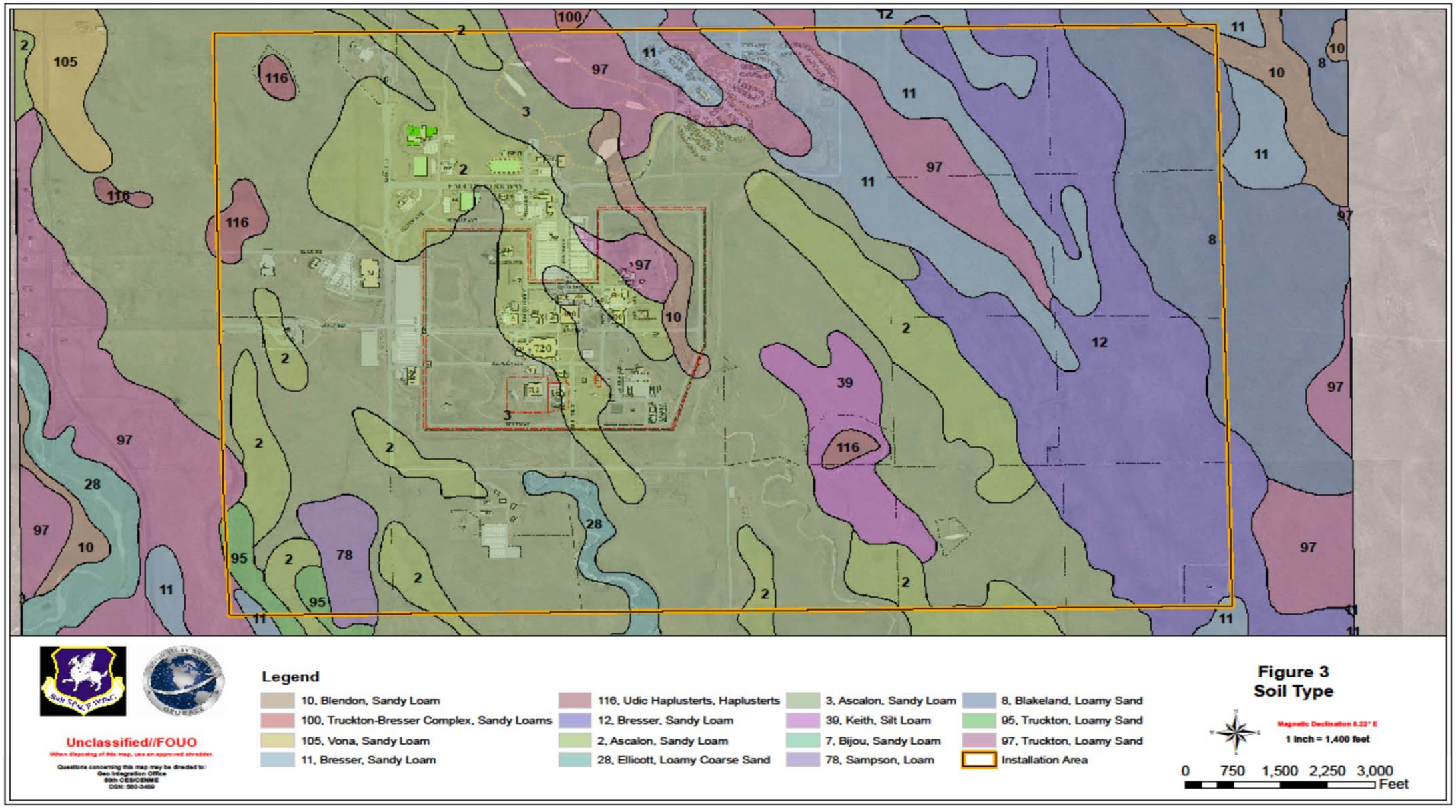
Soil Types

Nine soil types have been identified at Schriever AFB. These soil types, classified to the soil series level, consist primarily of sandy loam, loamy sand, and silt loam textures (Larsen 1981). The Ascalon sandy loam is the predominant soil type, covering the southwestern two-thirds of the property. The Bresser sandy loam is the second most abundant soil type, covering the majority of the northeastern one-third of the property as shown in the figure Soil Types.

Soils are located on level to moderately undulating slopes that have formed in material weathered from arkosic sedimentary rock. Current uses of the soils include wildlife habitat and urban forestry. Physical characteristics of the soils are shown in the table Physical Characteristics of Soils. All of the soils have an effective rooting depth of 60 inches or more. Windbreaks and other vegetation plantings are fairly well suited to the soils, but they must be protected from blowing sand and may require supplementary watering to become established due to the low water-holding capacity of the soil. The soil is rated as fair for wildlife habitat. Wildlife and urban forestry resources are discussed in greater detail in the section titled Ecosystems and the Biotic Environment.

Range Site Types

Range site types are vegetative mapping units, developed by the Natural Resources Conservation Service (NRCS) that are based on differences in soil conditions and plant species composition. Multiple soil mapping units can be included in one range site. The number and composition of plant species can vary with minor changes in soil textures, soil fertility, and available soil moisture. The dominant range sites at Schriever AFB are sandy plains and sandy foothills, which comprise 53 and 41 percent of the total area, respectively. Lesser range sites include loamy plains, sandy bottomland and loamy foothills, which comprise 4, 1, and 1 percent of the area, respectively. Range site delineations were based on soil maps in the 1974 Soil Survey of El Paso County Area, Colorado (Soil Conservation Service 1974). Range sites are listed in the table Soil Ratings.


Unclassified//FOUO
When disposing of this map, use an approved shredder.
Questions concerning this map may be directed to:
Geo Integration Office
Legend
10, Blendon, Sandy Loam
100, Truckton-Bresser Complex, Sandy Loams
105, Vona, Sandy Loam
11, Bresser, Sandy Loam
116, Udic Haplusterts, Haplusterts
12, Bresser, Sandy Loam
2, Ascalon, Sandy Loam
28, Ellicott, Loamy Coarse Sand
3, Ascalon, Sandy Loam
39, Keith, Silt Loam
7, Bijou, Sandy Loam
78, Sampson, Loam
8, Blakeland, Loamy Sand
95, Truckton, Loamy Sand
97, Truckton, Loamy Sand
Installation Area
Figure 3
Soil Type
Magnetic Declination 8.22° E
1 inch = 1,400 feet
0 750 1,500 2,250 3,000
Feet

Soil Types

Physical Characteristics of Soils

Soil Type Number	Soil Type Name	Slope (%)	Water Infiltration Rate	Water Erosion Hazard	Wind Erosion Hazard	Buildings	Roads	Parks and Recreation Facilities
2/3	Ascalon sandy loam	1-9	moderate	moderate	moderate	moderate-low soil strength, shrink-swell	moderate-low soil strength, shrink-swell	moderate-slope
8	Blakeland loamy sand	1-9	high	moderate	severe	moderate-slope	slight	moderate-sandy
10	Blendon sandy loam	0-3	moderate	moderate	moderate	slight	moderate-low soil strength	slight
11/12	Bresser sandy loam	0-5	moderate	slight to mod-erate	moderate	slight	slight	slight
28	Ellicott loamy course sand	0-5	high	high	moderate	severe-flooding	severe-flooding	severe-flooding
39	Keith silt loam	0-3	moderate	moderate	slight	moderate to severe-shrink-swell	severe-frost action	slight
78	Sampson loam	0-3	moderate	slight	slight	moderate-low soil strength, shrink-swell	moderate low soil strength, frost action	slight
95	Truckton loamy sand	1-9	moderate	moderate to high	moderate	moderate-slope	moderate-frost action	moderate-sandy slope
97	truckton loamy, sand	3-9	moderate	moderate	moderate	moderate-slope	moderate-frost action	slight-slope

Soil Ratings

Soil Type Number	Soil Type Name	Range Site Type	Average Forage Production Lbs/acre	Wildlife Habitat Potential	Urban Forestry	Limitation For Establishing Trees and Shrubs
2/3	Ascalon sandy loam	sandy plains	1,400	fair	suited	soil blowing
8	Blakeland loamy sand	sandy foothills	1,500	fair	moderately well-suited	soil blowing, low available water ca-pacity
10	Blendon sandy loam	sandy foothills	1,500	fair	suited	soil blowing
11/12	Bresser sandy loam	sandy foothills	1,500	fair	suited	soil blowing
28	Ellicott loamy course sand	sandy bottomlands	1,200	very poor	moderately well-suited	soil blowing, low available water ca-pacity
39	Keith silt loam	loamy plains	1,100	fair	well-suited	weed control
78	Sampson loam	loamy foothills	1,200	not rated	well-suited	weed control
95	Truckton sandy loam	sandy foothills	1,600	fair	moderately well-suited	soil blowing
97	Truckton sandy loam	sandy foothills	1,500	fair	well-suited	soil blowing

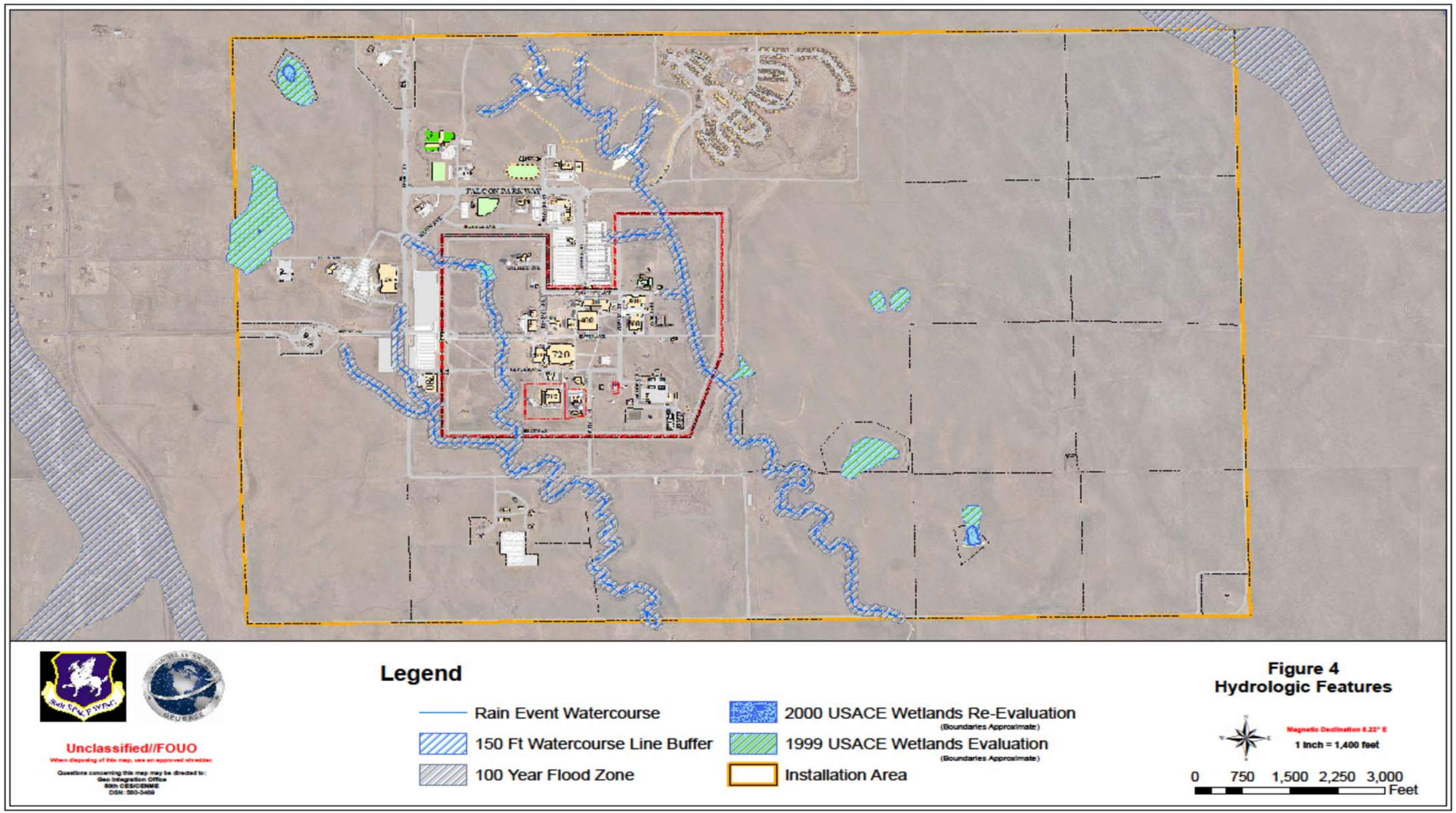
2.2.4 Hydrology

Groundwater

The aquifers in the Schriever AFB region are roughly 125 feet below the surface and consist of unconsolidated sediments with good water quality. Groundwater, in general, flows toward the south and east, beyond the base, and discharges into streams (see figure Hydrologic Features). The base's water supply is provided by the Cherokee Metropolitan Water District.

Surface Water

The Arkansas River Watershed is characterized by many unnamed, ephemeral or intermittent streams. Schriever AFB itself contains no perennial streams or water bodies; all drainages flow only ephemerally. During or after precipitation or snowmelt, flow in the dry stream beds on base is not predictable. These drainages have sandy bottoms, support little vegetation, and are highly susceptible to water erosion. Culverts have been constructed in the drainages on the improved and semi-improved land. Riprap and concrete aprons have been placed at the culvert openings and at discharge points to protect these structures from erosive flows. To reduce high flow water velocity, Schriever AFB has installed five erosion control dams north of the RA.



Hydrologic Features

2.3 Ecosystems and the Biotic Environment

2.3.1 Ecosystem Classification

Schriever AFB is located in the rolling high plains and tablelands of the Great Plains ecoregion, a temperate steppe ecosystem characterized by a semiarid continental climate regime, relatively low precipitation and high evapotranspiration rates, and steppe vegetation consisting of diverse, low-growing grass species which grow in bunches. Schriever AFB is dominated by two natural ecosystems, the shortgrass prairie and wet grassland meadows. Two man-made ecosystems, including landscaped areas around buildings and the urban forest, are also present.

2.3.2 Vegetation

Vegetation associations are classified by dominant species in the area. Defining habitats is necessary to assess the potential presence of wildlife, threatened and endangered species, and other sensitive species. In turn, these evaluations make it possible to identify areas that require preservation or management attention.

Native Vegetative Cover

The prairie landscape of Schriever AFB contains a vast assortment of plant species, provided in Appendix C Schriever AFB Plant Species. The plant distribution by range site is illustrated in figure Plant Distribution by Range Site.

The prairie is spotted with natural depressions, called playas, which are common throughout the Great Plains. Playas may be intermittently saturated, or even hold standing water, in unusually wet years. TwoTwo playas on the installation support a rare plant community, the Western Wheatgrass (*Pascopyrum smithii)* and- Spikerush (*Eleocharis* spp.) Wet Meadow association, previously known from only a few playa areasareas in Wyoming (Doyle et al. 2001). Although trees are rare on the shortgrass prairie, some isolated small stands do exist along a draw south of Enoch Road near the building 800 area, around three former ranch facilities, and near a windmill southeast of the RA. Mature cottonwood (*Populus deltoides*) can be found south of Enoch Road, while trees around the former ranches and the windmill are primarily box elder (*Acer negundo*) and hawthorne (*Crataegus spp.)*

Non-native Species - Invasive

Article 5.5-108 of Colorado Revised Statute Title 35 defines three classes of noxious weeds within the state according to occurrence, threat level, and ease of control. The three weed classes are as follow:

- List A, rare noxious weed species that are subject to eradication wherever detected statewide in order to protect neighboring lands and the state as a whole
- List B, noxious weed species with discrete statewide distributions that are subject to eradication, containment, or suppression in portions of the state designated by the commissioner in order to stop the continued spread of these species
- List C, widespread and well-established noxious weed species for which control is recommended but not required by the state, although local governing bodies may require management

The Colorado Weed Management Association defines a fourth class: Watch List Species, or those non-native species whose impacts and distribution are not yet well understood (Colorado Weed Management Association 2013.

Several noxious weed species, as defined by state regulation, have been found on Schriever AFB. Noxious weed surveys were conducted in 2004 (North Wind 2005), 2012 (North Wind 2012a), and 2016 (Smith et al. 2017). The results of those surveys can be found on the following table.

Results of Noxious Weed Surveys on Schriever AFB

Common Name	Scientific Name	Class	2004 (acres)[1]	2012 (acres)[2]	2016 (acres)[3]	2016 Mapped Locations
Bull thistle	*Cirsium vulgare*	B	0	1 plant	0	0
Canada thistle	*Cirsium arvense*	B	1	3.45	11.5	181
Field bindweed	*Convolvulus arvensis*	C	19	22.52	13.4	79
Knapweeds	*Centaurea diffusa; C. stoebe,* hybrid	B	<2	<5.75	6.3	46
Musk thistle	*Carduus nutans*	B	<0.25	0.02	0.02	1
Puncture vine	*Tribulus terrestris*	C	(Present)	0	0.45	1
Russian-olive	*Elaeagnus angustifolia*	B	(Present)	0.31	0.52	29
Tamarisk	*Tamarix ramosissima*	B	0	0	<0.01	1

[1]North Wind 2005
[2]North Wind 2012a
[3]Smith et al. 2017

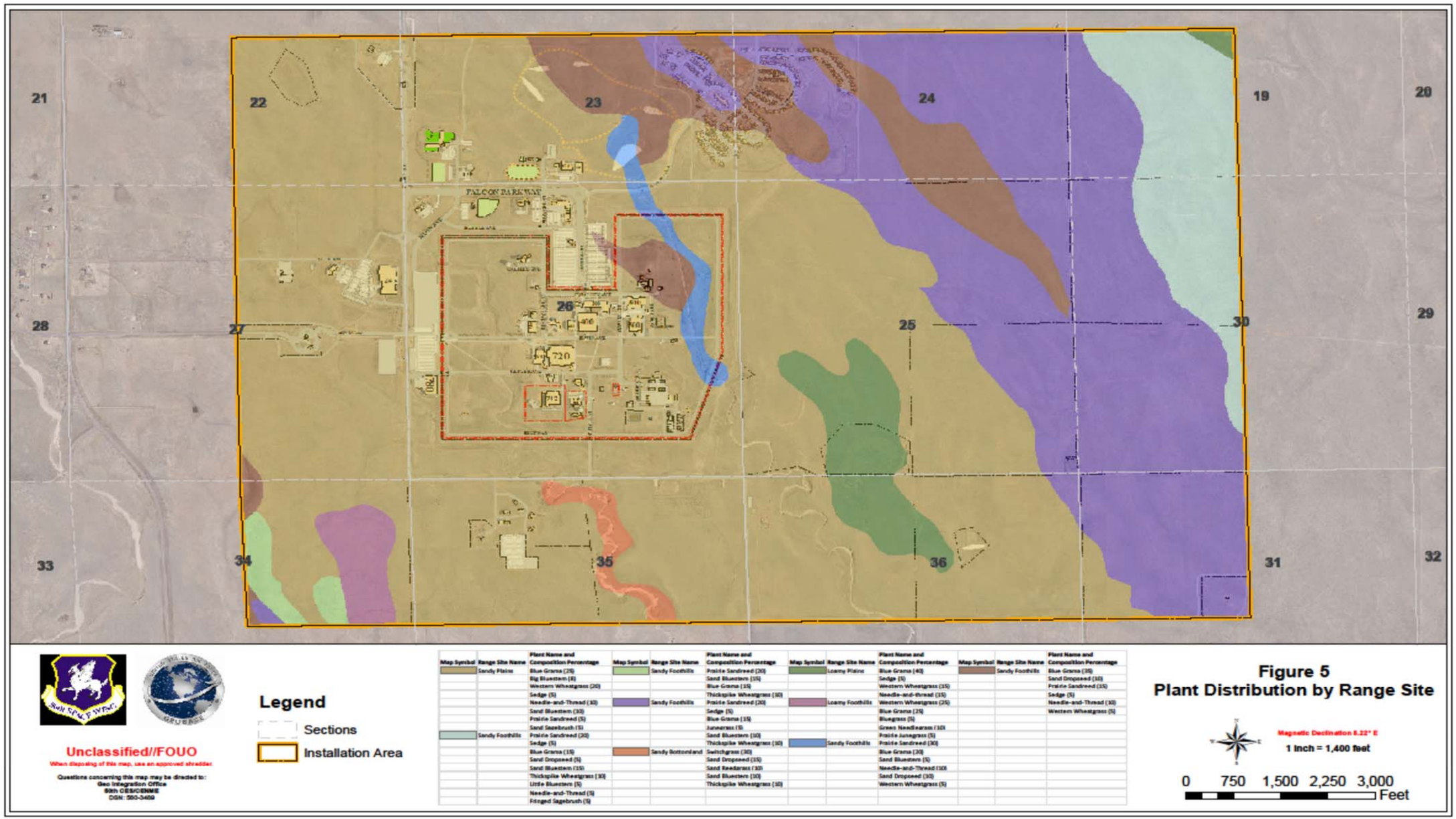
One additional invasive species, hoary cress, also known as whitetop (*Cardaria draba*), was found on the installation in 2017 but was not detected by noxious weed survey personnel 2016.

Landscaped Areas

Landscaped areas at Schriever AFB consist of irrigated turf grasses, native grass plantings, and native and ornamental shrubs and trees. The landscaped areas include the base entryway, Falcon Parkway, medians within the parking areas, and recreational areas.

The urban forest at Schriever AFB consists of tree plantings within the developed lands on the base. The tree composition consists of approximately 45 percent coniferous trees and 55 percent deciduous trees. The tree species present at Schriever AFB are identified in Appendix C Schriever AFB Urban Forest Tree Species.

An Urban Forestry Management Plan Survey Report prepared in 2000 documents over 2,200 woody plants (World Tree, Inc. 2000). An inventory of tree type, location, size, quality, and safety was also completed (Harland Bartholomew & Associates, Inc. 1997). Data associated with this survey can be viewed on the Geographic Information System (GIS) at Schriever AFB.



Map Symbol	Range Site Name	Plant Name and Composition Percentage
	Sandy Plains	Blue Grama (25)
		Big Bluestem (8)
		Western Wheatgrass (20)
		Sedge (5)
		Needle-and-Thread (10)
		Sand Bluestem (10)
		Prairie Sandreed (5)
		Sand Bluestem (5)
	Sandy Foothills	Prairie Sandreed (20)
		Sedge (5)
		Blue Grama (15)
		Sand Dropseed (5)
		Sand Bluestem (15)
		Thickspike Wheatgrass (10)
		Little Bluestem (5)
		Needle-and-Thread (5)
		Fringed Sagebrush (5)

Map Symbol	Range Site Name	Plant Name and Composition Percentage
	Sandy Foothills	Prairie Sandreed (20)
		Sand Bluestem (15)
		Blue Grama (15)
		Thickspike Wheatgrass (10)
	Sandy Foothills	Prairie Sandreed (20)
		Sedge (5)
		Blue Grama (15)
		Junegrass (5)
		Sand Bluestem (10)
		Thickspike Wheatgrass (10)
	Sandy Bottomland	Switchgrass (30)
		Sand Dropseed (15)
		Sand Reedgrass (10)
		Sand Bluestem (10)
		Thickspike Wheatgrass (10)

Map Symbol	Range Site Name	Plant Name and Composition Percentage
	Loamy Plains	Blue Grama (40)
		Sedge (5)
		Western Wheatgrass (15)
		Needle-and-thread (15)
	Loamy Foothills	Western Wheatgrass (25)
		Blue Grama (25)
		Bluegrass (5)
		Green Needlegrass (10)
	Sandy Foothills	Prairie Junegrass (5)
		Prairie Sandreed (30)
		Blue Grama (20)
		Sand Bluestem (5)
		Needle-and-Thread (10)
		Sand Dropseed (10)
		Western Wheatgrass (5)

Map Symbol	Range Site Name	Plant Name and Composition Percentage
	Sandy Foothills	Blue Grama (30)
		Sand Dropseed (10)
		Prairie Sandreed (15)
		Sedge (5)
		Needle-and-Thread (10)
		Western Wheatgrass (5)

Plant Distribution by Range Site

2.3.3 Fish and Wildlife

CNHP staff conducted a biological inventory of Schriever AFB in 2000 (Fayette et al. 2000) and a Sensitive Species Survey 2017-2018 (Sovell and Doyle 2018). North Wind also surveyed Schriever AFB in 2012 (North Wind 2012b). Mammals identified on site in these surveys are listed in Appendix C Schriever AFB Wildlife Species.

Outside of these surveys, there have been as many as eight pronghorn observed inside the fenced area of Schriever AFB. Under normal climatic conditions most of a pronghorn's water requirements are met in the plant material they eat (O'Gara and Yoakum 2004). However, health may become an issue during periods of severe drought when the need for water is greater and the availability of water through normal dietary means is lessened.

2.3.4 Threatened and Endangered Species and Species of Concern

There are no known federally listed TES on Schriever AFB, however there are species of concern. The CNHP's Sensitive Species Survey in 2018 found a presence of the state-listed threatened species, burrowing owl and the presence of a globally rare plant species, plains ragweed (*Ambrosia linearis*). Through USFWS surveys a state-listed species of special concern, black-tailed prairie dogs, was noted as well as Birds of Conservation Concern (BCC). Schriever AFB contains no species on the Information for Planning and Construction (IPaC) resource list nor the list from The Strategic Plan for Amphibian and Reptile Conservation and Management on Department of Defense Lands (Lovich et al. 2015).

Prairie Dogs

Black-tailed prairie dogs, a state-listed and CNHP species of special concern, occupy shortgrass and mixed-grass prairie habitats with well-drained, friable soils that permit the construction of complex burrow systems. The species is considered to be secure on a global scale, but there is cause for long-term concern due to habitat loss attributable to land use change and development. Statewide the species is considered vulnerable with a moderate risk of extinction due to recent and widespread declines in the state.

In 2000, CNHP conducted a natural heritage inventory of Schriever AFB, with the objective of documenting rare or imperiled species and significant natural communities. During the inventory process, no prairie dog colonies were recorded on the site (Fayette et al. 2000). By 2002, prairie dog colonies were reestablished on the installation through immigration from adjacent habitat and expanded over the next decade. In 2015, about 171 acres were located in established prairie dog control zones (*see* Section 7.4), and those colonies were subject to lethal control, leaving approximately 77 acres of active prairie dog colonies at the end of calendar year 2015 (Canestorp 2016). Between 2015 and 2019, installation acreage occupied by prairie dog towns fluctuated due to mortality caused by outbreaks of sylvatic plague and after implementation of lethal control measures. (Canestorp 2018).

Prairie dog colony acreages per survey year, Schriever AFB[1].

Year	2000	2002	2004	2005	2012	2015	2016	2017	2018	2019
Acreages	0	22	111	294	599	248[2]	109	83	228	305[2]

[1]From Canestorp 2018.

[2]Figure indicates total colony acreage, not reflecting prairie dog control efforts.

In August 2019, two deceased prairie dogs were collected on the western side of the installation, near Blue Road; these animals later tested positive for sylvatic plague. Upon this discovery, 62 acres of prairie dog colonies, including the affected colony and complexes near the installation housing area, were successfully treated with the pesticide Deltamethrin, interrupting the tick-borne infection vector of sylvatic plague. No further mortality was observed in the affected colony or elsewhere on the installation. Additionally, lethal control was effected on 21 acres of established prairie dog control zones. See the following figure for the number and locations of prairie dog colonies on Schriever AFB in 2019.

Birds

Schriever AFB is located within the Central Flyway, a major corridor for bird migration which extends from Canada to the Gulf of Mexico. The western boundary of the flyway follows closely the eastern base of the Rocky Mountains. The USFWS report, issued by the Division of Migratory Bird Management, entitled Birds of Conservation Concern 2008, identifies 45 species of migratory birds that occur in USFWS Region 6, which includes Colorado.

Sixteen species in Bird Conservation Region (BCR) 18, shortgrass prairie, represent the highest conservation priorities (beyond those already designated as federally threatened or endangered) (U.S. Fish and Wildlife Service 2008). These species are called Birds of Conservation Concern (BCC), and include the burrowing owl, lark bunting (*Calamospiza melanocorys*), mountain plover (*Charadrius montanus*), golden eagle (*Aquila chrysaetos*) and prairie falcon (*Falco mexicanus*) all of which have been documented at Schriever AFB. The ferruginous hawk (*Buteo regalis*) is common at Schriever AFB; it is state-listed as a species of special concern (not a statutory category), and is ranked by the CNHP as G4/S3B, S4N (globally apparently secure, however the breeding population may be "vulnerable" while the nonbreeding population may be "apparently secure" in the state) (Colorado Natural Heritage Program 2016). The Swainson's hawk is a management watch list species for BCR 18 as determined by PIF. Swainson's hawks have been observed nesting on Schriever AFB. Mountain plovers were first observed on Schriever AFB in 2015. During the 2018 burrowing owl surveys an adult with two fledglings were observed in the southern portion of the base, confirming breeding by this species on site. The burrowing owl, a state-listed threatened species and a USFWS priority species, was first observed at Schriever AFB in November 2001 in habitat associated with increasing prairie dog colonies. With the expansion of the black-tailed prairie dog, habitat was created for the burrowing owl, first observed at Schriever AFB in November 2001. Populations have been monitored annually since 2015; see the following table for burrowing owl nests recorded from 2015 to 2019. The locations of burrowing owl nest burrows in 2019 are shown in the figure, Prairie Dog Colonies with Burrowing Owl Nests 2019.

Burrowing owl nests recorded per year, Schriever AFB[1].

Year	2015	2016	2017	2018	2019
Nest burrows	3	6	5	4	3

[1]From Canestorp 2018.

In 2015 CPW revised its conservation strategy (Colorado Parks and Wildlife 2015), and refined its categorization of Colorado's wildlife species determined to be Species of Greatest Conservation Need (SGCN). These species are now assigned to one of two tiers: Tier 1 species are of greatest conservation concern while Tier 2 species are, while still in need of monitoring, of somewhat less concern. Three Tier 1 species have been documented on Schriever AFB: burrowing owls and mountain plovers, both recorded

as breeding on site, and golden eagles, a transient species, are known to nest in the Corral Bluffs area nearby. Twelve Tier 2 species have been recorded. See the following table, Sensitive Species/Communities Potentially Found on Schriever AFB.

Pollinators

During the past several years, a serious decline has been detected in pollinator populations around the globe (National Research Council 2007, The White House 2015, U.S. Department of Agriculture and U.S. Department of Interior 2015). In 2014 the President issued a Presidential Memorandum, "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators" (The White House 2014), calling for the establishment of a Pollinator Task Force consisting of the heads of several federal agencies and organizations to address and reverse pollinator population declines. Furthermore, the DoD signed a Memorandum of Understanding with Pollinator Partnership, a nonprofit organization committed to the restoration of pollinator populations and the environments they reside in (see *http://www.pollinator.org/*). No surveys have been undertaken specifically for pollinators.

Threatened, Endangered, and Sensitive Species

Consultation with the USFWS, CPW, and CNHP has revealed that Schriever AFB is within the geographic range of several threatened, endangered, and sensitive species as well as other species of concern. A list of these species and their status is presented in the table Sensitive Wildlife Species Potentially Occurring at Schriever AFB.

Sensitive Species/Communities Potentially Found on Schriever AFB

		Federal/ State Status	USFWS BCC[1]	PIF[2]	CNHP rank[3]	Recorded on site
Plants						
Schriever Playas PCA	*Pascopyrum smithii – Eleocharis* spp.				G2/S2	X
Streaked bur ragweed	*Ambrosia linearis*				G3/S3	X
Birds						
Bald Eagle	*Haliaeetus leucocephalus*	SC,T2	X		G5/S1B,S3N	X
Bobolink	*Dolichonyx oryzivorus*	T2			G5/S3B	
Burrowing Owl	*Athene cunicularia*	ST,T1	X		G4/S4B	X
Cassin's Sparrow	*Peucaea cassinii*	T2			G5/S4B	X
Ferruginous Hawk	*Buteo regalis*	SC,T2			G4/S3B,S4N	X
Golden Eagle	*Aquila chrysaetos*	T1	X			X
Grasshopper Sparrow	*Ammodramus savannarum*	T2		X		X
Lark Bunting	*Calamospiza melanocorys*	T2	X			X
Loggerhead Shrike	*Lanius ludovicianus*	T2				X
Long-billed Curlew	*Numenius americanus*	SC,T2	X		G5/S2B	X
Mountain Plover	*Charadrius montanus*	SC,T1	X		G3/S2B	X
Northern Harrier	*Circus hudsonius*	T2				X
Prairie Falcon	*Falco mexicanus*	T2	X		G5/S4B,S4N	X

Scaled quail	*Callipepla squamata*			X		
Short-eared Owl	*Asio flammeus*	T2			G5/S2B	X
Swainson's Hawk	*Buteo swainsoni*	T2				X
Upland Sandpiper	*Bartramia longicauda*	T2	X			
Mammals						
Black-tailed Prairie Dog	*Cynomys ludovicianus*	SC,T2			G4/S3	X
Silver-haired Bat	*Lasionycteris noctivagans*				G3,G4/S3,S4	X
Swift Fox	*Vulpes velox*	SC,T2			G3/S3	X
White-tailed Jackrabbit	*Lepus townsendii*	T2				
Insects						
Colorado Blue	*Euphilotes rita coloradensis*	T2				
Mottled Duskywing	*Erynnis martialis*	T2				
Ottoe Skipper	*Hesperia ottoe*	T2				
Regal Fritillary	*Speyeria idalia*	T2				
Rhesus Skipper	*Polites rhesus*	T2				

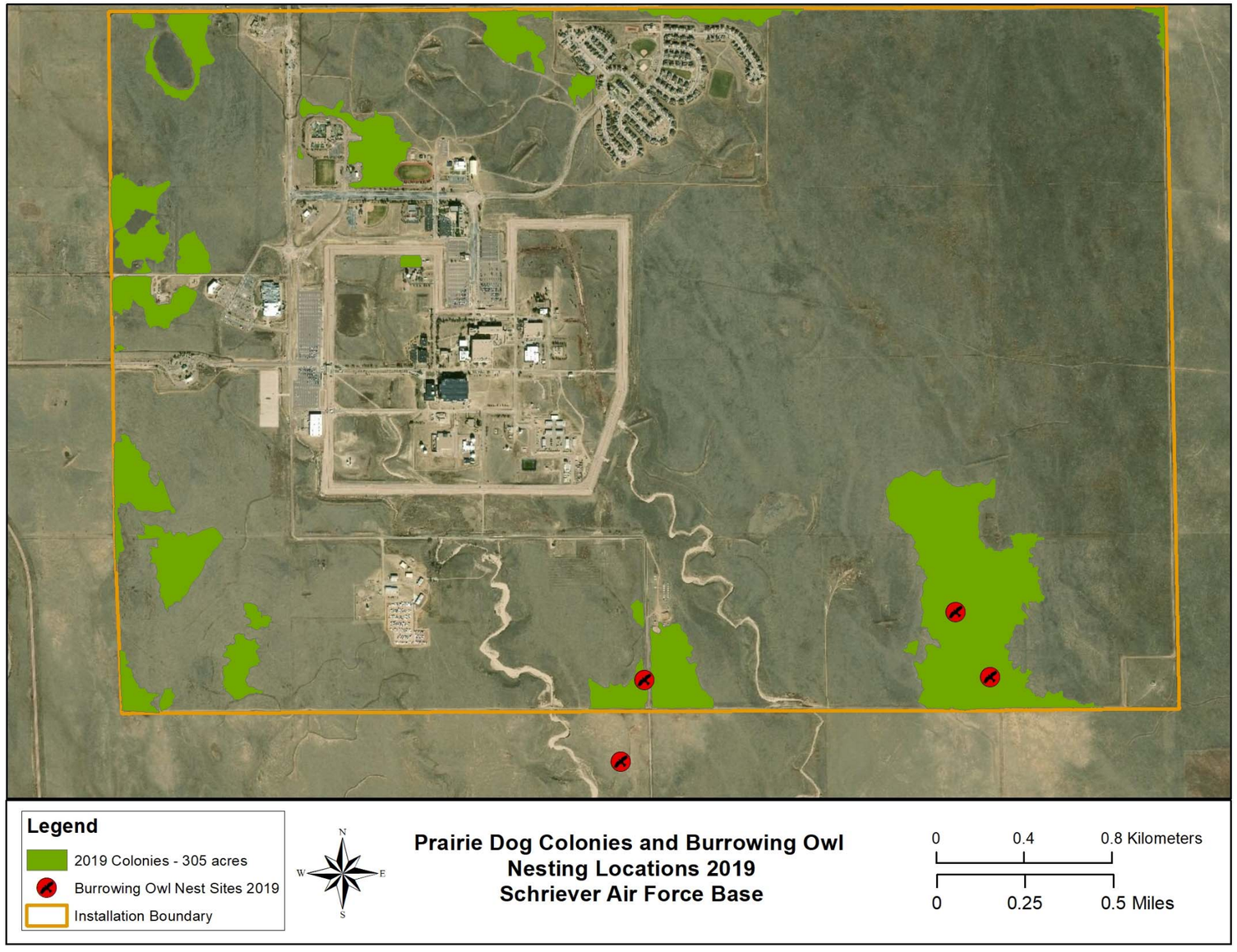
[1]USFWS Birds of Conservation Concern

[2]Partners in Flight Species of Continental Concern or Common Bird in Steep Decline

[3]Colorado Natural Heritage Program rank. The CNHP ranking system is too extensive to list here. To review the ranking system, visit *https://cnhp.colostate.edu/ourdata/help/heritage/*.

FE = Federally Endangered; FT = Federally Threatened; SE = State Endangered; ST = State Threatened; SC = State Special Concern; T1 = State Tier 1 Species of Greatest Conservation Need (SGCN); T2 = Tier 2 SGCN

X = Documented on site.



Prairie Dog Colonies with Burrowing Owl Nests 2019

2.3.5 Wetlands and Floodplains

Wetlands

Wetlands are defined by the U.S. Environmental Protection Agency (EPA) as "….areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." (see *http://water.epa.gov/lawsregs/guidance/ wetlands/definitions.cfm*).

In 2013 the USACE conducted a wetland delineation effort at Schriever and delivered a determination that no jurisdictional wetlands and No Waters of the United States were to be found on Schriever AFB (see appendix titled U.S. Army Corps of Engineers Memorandum, re: Determination of Jurisdictional Wetlands on Schriever AFB, 2013). This determination was made primarily on the on the basis of the hydrological isolation of the playas; in other words, Waters of the United States did not flow into nor out of these wet meadow areas.

Floodplains

One 100-year floodplain, encompassing approximately 8.5 acres, is located in the northeastern corner of the base (see figure Hydrologic Features). A 100-year flood zone is a land area having a one percent chance of being flooded during a given year. Plans to develop in this area would be subject to the provisions of Executive Order 11988, *Floodplain Management*, which requires considering alternatives to the direct and indirect adverse impacts associated with short- and long-term modifications to designated floodplain areas. Schriever AFB has no plans to develop or otherwise alter the hydrology of this area and will continue to manage it in a natural state.

Droughts and Flooding Events

Colorado experiences frequent drought events of moderate severity. However, the drought of 2002 was the most severe since prior to 1900 (*www.ncdc.noaa.gov/cag*). That event, coupled with low precipitation rates since then, and additional drought events in 2012, 2013, and 2018 have resulted in generally dry conditions throughout the region despite relatively wet conditions in the winter and spring of 2019. Drought events are expected to become longer and more frequent in the Colorado Front Range under expected climate change scenarios.

Flooding has not proven to be a major climatic phenomenon on Schriever AFB. The relatively flat landscape with generally shallow drainage systems and coarse, well-drained soils are not conducive to severe flooding.

2.3.6 Other Natural Resource Information

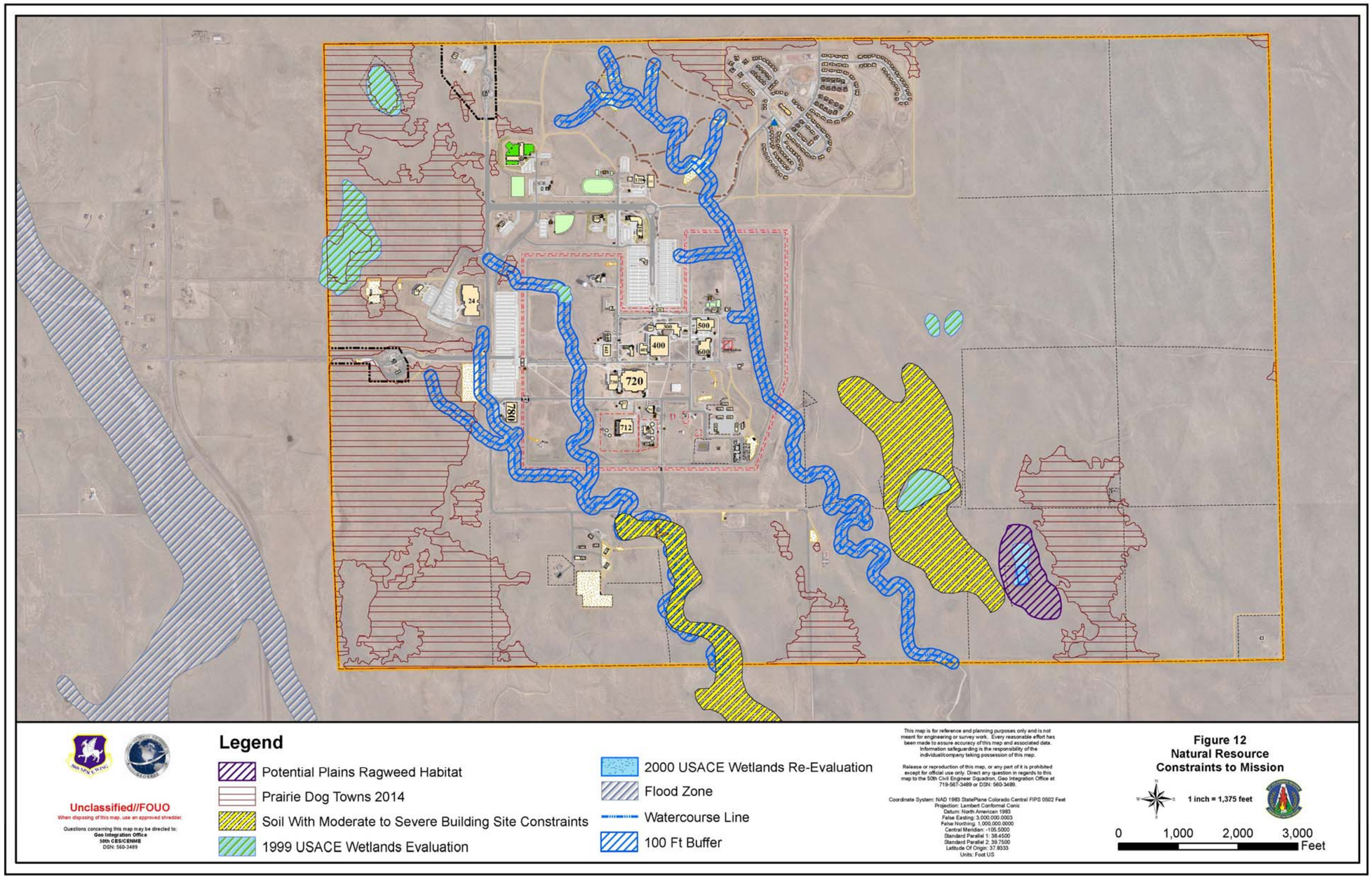
Forage production onsandy plains and sandy foothills range sites such as Schriever AFB amounts to approximately 1,500 pounds per acre (lbs/acre) during a normal year, and varies from 800 lbs/acre during an unfavorable year to 2,000 lbs/acre during a favorable year (Larsen 1981). In January 2003, the NRCS estimated forage production in the range of 25 to 75 lbs/acre.

2.4 Mission Impacts on Natural Resources

2.4.1 Natural Resource Constraints to Mission and Mission Planning

Few natural resource constraints to installation planning and missions exist at Schriever AFB. Most of the undeveloped portions of the base are suitable for construction and may be used for future missions. There

are no natural resource constraints outside the installation boundary that limit mission expansion or future development. There are, however, some areas on site with constraints that would reduce or eliminate their suitability for development. These areas include unstable soils as described in section 2.2.3, intermittent drainages, and floodplains. See the figure Natural Resource Constraints to Mission below.



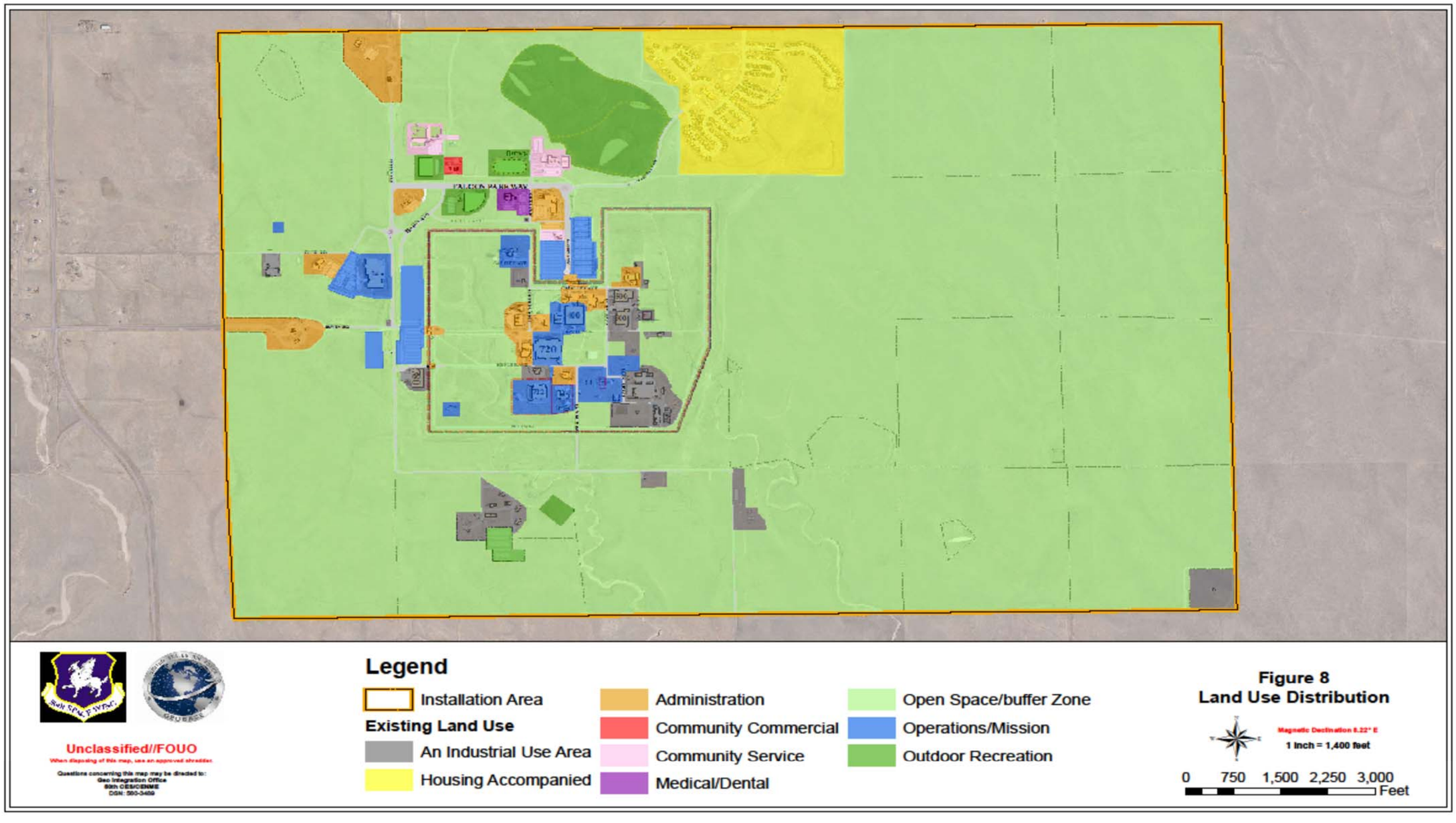
Natural Resource Constraints to Mission

2.4.2 Land Use

Lands at Schriever AFB are classified as either (1) improved grounds, (2) semi-improved grounds, or (3) unimproved grounds. Land use definitions follow:

- Improved Grounds: Grounds on which personnel annually plan and perform intensive maintenance activities. These are developed areas of an installation that have lawns and landscape plantings that require intensive maintenance.
- Semi-improved Grounds: Grounds where personnel perform periodic maintenance primarily for operational and aesthetic reasons (such as erosion and dust control)
- Unimproved Grounds: Grounds not classified as improved or semi-improved and usually not mowed more than once a year

There are approximately 340 acres of improved lands, 300 acres of semi-improved lands, and 3,200 acres of unimproved lands on the base. The improved areas are located primarily within the RA and consist of office space, satellite tracking facilities, the power production plant, and maintenance facilities. Improved areas outside the RA include facilities that are not considered mission essential but that support base operations. These facilities include the Visitor's Center, Fitness Center, administrative facilities, and warehouse buildings south of the RA. Recently constructed on-base housing and the Child Development Center also constitute improved grounds. Semi-improved lands are located both inside and outside the RA. These areas provide space for vehicle parking and the athletic fields. Land use distribution is shown in the figure below titled Land Use Distribution.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When disposing of this map, use an approved shredder.
Questions concerning this map may be directed to:
Geo Integration Office
50th CES/CEIGWE
DSN: 560-3456
Legend
Installation Area
Existing Land Use
An Industrial Use Area
Housing Accompanied
Administration
Community Commercial
Community Service
Medical/Dental
Open Space/buffer Zone
Operations/Mission
Outdoor Recreation
Figure 8
Land Use Distribution
Magnetic Declination 8.22° E
1 Inch = 1,400 feet
0 750 1,500 2,250 3,000
Feet

Land Use

2.4.3 Current Major Impacts

There are no major impacts currently, however there are some impacts that may result from use of petroleum products, discharge of wastewater, use of pesticides, solid waste management or hazardous waste management.

Petroleum, Oil, and Lubricants

Use of petroleum, oils, and lubricants (POL) at Schriever AFB consists of diesel fuel and gasoline used in boilers, emergency generators, and vehicles. Fuel is dispensed to motor vehicles at two on-base service stations. The environmental concerns from spills and leaks of POLs from the storage tanks would be contamination of soil and groundwater. The base has an approved Facility Response Plan as required by the Oil Pollution Act of 1990 and is required to report fuel releases of 25 gallons or more to the Colorado Department of Public Health and the Environment (CDPHE). Any spill or leak of petroleum products will be contained, and cleaned up as soon as possible to prevent soil and groundwater contamination and reported to the State per regulatory requirements, however this has lower impacts; as the installation has no Waters of the United States.

Wastewater Discharges

Wastewater at Schriever AFB is primarily domestic in nature. The Central Utilities Plant contributes some industrial wastewater from oil/water separators, cooling towers, and boiler blowdown. A gravity flow sewage system collects wastewater and discharges it to the Cherokee Metropolitan District Publicly Owned Treatment Works. The average daily wastewater flow rate is approximately 152,000 gallons per day. Currently, wastewater discharge is conducted under Permit Number CMD-00777, Authorization to Discharge Industrial Wastewaters to the Cherokee Metropolitan District, effective 15 May 2019 and expiring 14 May 2023.

An industrial inflow-infiltration assessment was conducted on the wastewater system in 2012 to evaluate the connectivity and condition of the system as well as identify potential sources of high wastewater flow rates. The condition assessment found that approximately 87 percent of all wastewater features were in good or excellent condition and approximately 9 percent of all wastewater features are in poor or very poor condition. Based on condition assessment activities, there does not appear to be a significant volume of storm water flow into the wastewater system.

Storm water is of no risk due to the determination of no Waters of the United States.

Pesticides

Pesticide management at Schriever AFB is managed by the grounds maintenance contractor and by the 21st Civil Engineer Squadron (CES) pest management office at Peterson AFB, CO, under a functional Memorandum of Understanding, which delegates all Schriever AFB pest management responsibilities to the 21 CES. Pesticide mixing is performed off base.

Solid Waste

Solid wastes generated on base are hauled to the Colorado Springs landfill on east State Highway 94. Recycling and reduction programs have been developed and implemented at the base to reduce the quantity being hauled to landfills, in accordance with AFI 32-7042, Waste Management. The management of municipal solid waste consists of efforts to reduce waste sources, reuse material when possible, or recycle. Strategies for waste reduction and pollution prevention; have been incorporated into the installation's current Integrated Solid Waste Management Plan.

Hazardous Materials and Waste

The base is classified as a Very Small Quantity Generator of hazardous waste. The hazardous material consists of battery acid, dry cell batteries, flammable liquids, and rags containing cleaning solvents. The base has developed programs for addressing and reducing potentially hazardous materials and/or wastes as mentioned above**.** No known major impacts to the environment are present from the storage, use, or disposal of hazardous materials.

Human/Wildlife Conflicts

Prairie dogs sometimes expand into areas where their presence may result in human health or security concerns. When colonies encroach upon residential housing areas or high density work areas and diseases transmissible to humans, such as plague, enter the population, it's conceivable that people may contract the disease through one vector or another. This is not restricted to prairie dogs, as rabbits or other animals may present likewise threats. In addition, prairie dogs may expand into areas where their presence threatens security systems, such as around the RA. In such situations threats to human health and/or security will be removed in the most practical and expedient manner feasible.

2.4.4 Potential Future Impacts

Development is ongoing and/or planned not only at Schriever AFB but also in the surrounding vicinity. Approximately one-half mile west of Schriever AFB across Curtis Road, limited construction has occurred in a 150-acre residential development. Land between this residential development area and Schriever AFB is used for livestock grazing. Between the northern installation perimeter and US 94, the planned Voyager Ranch development would construct up to 8.951 single- and multi-family residential units, as well as community, research & development, & open space features, on 5,322 acres of currently undeveloped grazing land.

On base, within the next 20 years, construction is planned to ensure that adequate community support facilities exist to support current and future mission requirements and population growth, to limit the RA to missions that require high levels of security, and to maintain appropriate force protection. Much of this on-base development is planned for already improved or semi-improved areas, minimizing impacts to natural resources. However, some developments are planned for unimproved areas, such as the eastern buffer zone, that may compromise the relatively "pristine" natural character of these areas. Potential developments for this area include a solar farm and an antenna installation. In the northwest portion of the installation, a planned Base Exchange and a Commissary would likewise impact the resources within the footprint of development (Schriever Air Force Base 2019) if these projects are executed.

Schriever AFB is required to evaluate the impacts of these construction activities on a project-specific basis through NEPA. The extent of impact to the environment, if any, will be disclosed by the process. Through the base's IDP, environmental constraints identified in this INRMP also will be incorporated into the design, location, and operation of future facilities.

2.4.5 Natural Resources Needed to Support the Military Mission

Natural resources needed to support the military mission at Schriever AFB include open areas that maintain flexibility for future mission requirements; natural drainages for flood control and water quality functions; stable soils for future development and mission support; and habitat and species that provide positive aesthetic, social, and recreational attributes, which substantially contribute to the overall quality of life. Their management is addressed in this INRMP and its associated operational component plans.

3.0 ENVIRONMENTAL MANAGEMENT SYSTEM

The AF environmental program adheres to the Environmental Management System (EMS) framework and it's Plan, Do, Check, Act cycle for ensuring mission success. Executive Order (EO) 13693, *Planning for Federal Sustainability in the Next Decade*, U.S. Department of Defense Instruction (DoDI) 4715.17, *Environmental Management Systems*, AFI 32-7001, *Environmental Management*, and international standard, ISO 14001:2004, provide guidance on how environmental programs should be established, implemented, and maintained to operate under the EMS framework.

The natural resources program employs EMS-based processes to achieve compliance with all legal obligations and current policy drivers, effectively managing associated risks, and instilling a culture of continuous improvement. The INRMP serves as an administrative operational control that defines compliance-related activities and processes.

4.0 GENERAL ROLES AND RESPONSIBILITIES

General roles and responsibilities that are necessary to implement and support the natural resources program are listed in the table below. Specific natural resources management-related roles and responsibilities are described in appropriate sections of this plan.

Office/Organization/Job Title (Listing is not in order of hierarchical responsibility)	**Installation Role/Responsibility Description**
Installation Commander	Ensures that an INRMP is developed and maintained. Associated responsibilities include approving the INRMP, certifying annual reviews as valid and current (unless delegated), signing 5 year reviews, providing appropriate funding and staffing to implement the INRMP, and controlling access to and use of installation natural resources.
AFCEC Natural Resources Media Manager/Subject Matter Expert (SME)/ Subject Matter Specialist (SMS)	Oversees program to assist regional AF installations in the implementation of Natural Resources Management Programs.
Installation Natural Resources Manager/POC	The focal point for all INRMP actions and issues. Active working relationships are established and maintained between the Natural Resources Manager and all relevant base and community organizations. The Natural Resources Manager is responsible for providing guidance on all natural resource matters to base units and the ESOHC, as well as for the adequacy and implementation of this INRMP. Specific responsibilities of the Natural Resources Manager include: • Maintaining an organization with the resources available to accomplish the INRMP and provide for the training of natural resources personnel • Implementing this INRMP and its programs to ensure the inventory, delineation, classification, and management of all applicable natural resources • Coordinating with local, state, and federal governmental and civilian conservation organizations relative to natural resources management

Office/Organization/Job Title (Listing is not in order of hierarchical responsibility)	**Installation Role/Responsibility Description**
	• Ensuring the ongoing and timely coordination of current and planned land uses between mission, natural resources, environmental, legal, and master planning • Ensuring all installation personnel are aware of and comply with procedures and requirements necessary to accomplish objectives of this INRMP together with laws, regulations, and other measures that promote environmental quality • Reviewing all environmental documents (e.g., environmental impact assessments and statements and remedial action plans), construction designs, and proposals to ensure adequate protection of natural resources and ensuring that technical guidance as presented in this INRMP is adequately considered • Inspecting and reviewing mitigation measures that have been implemented or recommended for the protection of natural resources
Installation Security Forces	Provides security and safety for Schriever AFB personnel
Installation Unit Environmental Coordinators (UECs); see AFI 32-7001 for role description	Responsible for coordinating environmental actions in his/her functional area
Installation Wildland Fire Program Manager	Acts as liaison to Wildland Fire Coordinator and manages wildland fire requirements
Pest Manager	Oversees the Pest Management Program on Schriever AFB
Range Operating Agency	Coordinates all range functions
Conservation Law Enforcement Officer (CLEO)	N/A
NEPA/Environmental Impact Analysis Process (EIAP) Manager	Prepares and analyses NEPA documents and is responsible for the distribution of such documents to pertinent entities for their review
National Oceanic and Atmospheric Administration (NOAA)/ National Marine Fisheries Service (NMFS)	N/A
US Forest Service	N/A
US Fish and Wildlife Service	Provides assistance in the implementation and management of the Schriever AFB Natural Resources Management Program
Colorado Parks and Wildlife	Provides expertise in the development phase of this plan and execution/signature of annual and 5-yr reviews. They may also be called upon from time to time for field assistance as necessary.
Base Civil Engineer	Ensures that plans and studies supporting the IDP, including the INRMP, are accomplished as necessary. Responsible of the preparation, maintenance, and day-to-day implementation of the INRMP. Ensure compliance with the INRMP and make recommendations to the Environment Safety and Occupational Health Council (ESOHC) for approval/disapproval.
Civil Engineer Squadron	Some responsibilities such as road repair and maintenance, weed and pest control, fire prevention and suppression, and grounds

Office/Organization/Job Title (Listing is not in order of hierarchical responsibility)	**Installation Role/Responsibility Description**
	maintenance, overlap with natural resources management programs. The Environmental Office supports these missions by providing regulatory and technical guidance, reviewing and requesting permits, and consulting with other agencies as required.
Public Affairs Office	Responsible for promoting an understanding of operations and providing professional advice, dissemination of information, and support to base leaders and activities. Natural resources are inherently of interest to the general public. Public support of natural resources management is vital to ensuring a regional approach.
Other Military Offices	Implementation of this INRMP also will require assistance from other squadrons and divisions such as Contracting and Logistics (procurement), Safety, Security Forces (general enforcement), and Resource Management (budget process). In addition, commanders of assigned and tenant units must be familiar with the INRMP contents and comply with its provisions. The commanders also must be involved in updating the INRMP, as well as its implementation through coordination with the Natural Resources Manager.
Staff Judge Advocate	Provides legal advice, counsel, and services to command, staff, and subordinate elements at Schriever AFB. Specific Staff Judge Advocate responsibilities with regard to integrated natural resources management include: • Conducting legal research and preparing legal opinions pertaining to interpretation and application of laws, regulations, statutes, and other directives • Coordinating with the Department of Justice, General Litigation Division (AFLOA/ JACL) of the Office of The Judge Advocate General (OTJAG), and other governmental agencies on matters pertaining to litigation for the federal government • Advising the Base Civil Engineer and staff on compliance with environmental laws • Reviewing all Air Force Forms 813 and EIAP (32 CFR 989, Air Force Environmental Impact Analysis Process) documentation to ensure legal sufficiency • Reviewing INRMPs to ensure legal sufficiency

5.0 TRAINING

AF installation NRMs/POCs and other natural resources support personnel require specific education, training and work experience to adequately perform their jobs. Section 107 of the Sikes Act requires that professionally trained personnel perform the tasks necessary to update and carry out certain actions required

within this INRMP. Specific training and certification may be necessary to maintain a level of competence in relevant areas as installation needs change, or to fulfill a permitting requirement.

Installation Supplement – Training

Guidance from AFI 32-7064:

NRMs at Category I installations must take the course, DoD Natural Resources Compliance, endorsed by the DoD Interservice Environmental Education Review Board and offered for all DoD Components by The Naval School, Civil Engineer Corps Officers School *http://www.netc.navy.mil/centers/csfe/cecos/* for CECOS course schedules and registration information. Other applicable environmental management courses are offered by the Air Force Institute of Technology (*http://www.afit.edu*), the National Conservation Training Center managed by the USFWS (*http://www.training.fws.gov*), and the Bureau of Land Management Training Center (*http://training.fws.gov*).

Natural resource management personnel shall be encouraged to attain professional registration, certification, or licensing for their related fields, and may be allowed to attend appropriate national, regional, and state conferences and training courses.

All individuals who will be enforcing fish, wildlife and natural resources laws on AF lands must receive specialized, professional training on the enforcement of fish, wildlife and natural resources in compliance with the Sikes Act. This training may be obtained by successfully completing the Land Management Police Training course at the Federal Law Enforcement Training Center (http://www.fletc.gov/).

Individuals participating in the capture and handling of sick, injured, or nuisance wildlife should receive appropriate training, to include training that is mandatory to attain any required permits.

The DoD supported publication Conserving Biodiversity on Military Lands -- A Handbook for Natural Resources Managers (http://dodbiodiversity.org) provides guidance, case studies and other information regarding the management of natural resources on DoD installations.

6.0 RECORDKEEPING AND REPORTING

6.1 Recordkeeping

The installation maintains required records IAW Air Force Manual 33-363, *Management of Records*, and disposes of records IAW the Air Force Records Management System (AFRIMS) records disposition schedule (RDS). Numerous types of records must be maintained to support implementation of the natural resources program. Specific records are identified in applicable sections of this plan, in the Natural Resources Playbook and in referenced documents.

Installation Supplement – Recordkeeping

Schriever AFB utilizes AFRIMS and the AFCEC implemented Environmental Dashboard (e-dash) for historical and current records.

6.2 Reporting

The installation NRM is responsible for responding to natural resources-related data calls and reporting requirements. The NRM and supporting AFCEC Media Manager and Subject Matter Specialists should

refer to the Environmental Reporting Playbook for guidance on execution of data gathering, quality control/quality assurance, and report development.

Installation Supplement –Reporting

As a result of the many natural resources related surveys, inventories, and projects that have been conducted on Schriever AFB over the years, as well as the need for management guidance, several reports and plans have been developed that qualify and quantify natural resource elements and provide management strategies. A listing of those reports and plans can be found at Appendix D.

7.0 NATURAL RESOURCES PROGRAM MANAGEMENT

This section describes the current status of the installation's natural resources management program and program areas of interest. Current management practices, including common day-to-day management practices and ongoing special initiatives, are described for each applicable program area used to manage existing resources. Program elements in this outline that do not exist on the installation are identified as not applicable and include a justification, as necessary.

Installation Supplement –Natural Resources Program Management

Natural resources program management involves the integration of numerous management areas, including coordination among stakeholders, geographic information systems (GIS), fish and wildlife management, threatened and endangered species management, water resources and wetlands protection, grounds maintenance, management of the urban forest, agricultural out leasing, wildland fire management, integrated pest management, outdoor recreation, cultural resources protection, enforcement, and public outreach.

Schriever AFB is assisted in the implementation of INRMP goals and objectives by a USFWS liaison under a Natural Resources Conservation Partnership. Under this partnership, as described in a memorandum dated 2 April 2018, embedded USFWS natural resources personnel assist the Schriever AFB natural resources manager with natural resources expertise, surveys and field work, training, meetings, and special projects on a part-time basis. USFWS has additionally entered in an agreement with the US Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) dated 24 July 2019 to provide wildlife management assistance on the installation on an as-needed basis.

7.1 Fish and Wildlife Management

Applicability Statement

This section applies to all AF installations that maintain an INRMP. The installation is required to implement this element.

Program Overview/Current Management Practices

The Sikes Act, as amended in 1997 (16 USC 67 a-1(b)), requires each military agency to ensure that services are provided for managing natural resources, including fish and wildlife, on each military installation. Wildlife at Schriever AFB is discussed in the Fish and Wildlife sections of this INRMP.

Because there is no hunting or fishing at Schriever AFB, the primary fish and wildlife management issue involves maintaining habitat for wildlife species associated with the shortgrass prairie. Shortgrass prairie flora and fauna evolved with grazing by wild ungulates including bison, mule deer, and pronghorn.

Since the perimeter fence was installed, observations indicate that biodiversity on the base has largely been maintained. In several places, it appears that coyotes have dug under the fence allowing rabbits, swift fox, and other small mammals to ingress/egress. As many as eight pronghorn have been observed inside the fenced area.

Knopf (1994) and Rosenberg et al. (2019) indicate that grassland bird species, as a community, have been suffering more dramatic declines than any other ecological grouping of North American bird species. This claim addresses not just threatened, endangered, or USFWS BCC priority species, but the full suite of grassland bird species. Migratory birds are protected through International Treaties and the MBTA. Federal regulations (50 CFR) provide the framework for regulation of migratory bird take and possession and Executive Order 13186 directs executive departments and agencies to take certain actions to further implement the MBTA. Federal permits are required to take, possess, transport, and dispose of migratory birds, bird parts, feathers, nests, or eggs. Schriever AFB will review all projects to ensure compliance with the MBTA, the Bald and Golden Eagle Protection Act, and USFWS recommended protocols. When necessary, application for permits will be made to the USFWS Migratory Bird Permit Office in Denver, Colorado. The base will maintain and improve habitat for these species, where possible, and monitor their presence as practicable. Construction, other disturbance activities, and prescribed burns in undisturbed areas on base are restricted from April 15 through August 15 in areas where nesting migratory birds may be present.

In 2018 the USFWS changed its policy regarding incidental take of migratory birds, such that if an action results in the take of a migratory bird when the intent of that action was not the destruction of the bird, the agency or organization undertaking that action could not be held liable for a violation of the Migratory Bird Treaty Act (U.S. Fish and Wildlife Service 2018). However, the DoD has indicated that despite the USFWS determination regarding take of migratory birds, military elements should, "….continue to follow existing Department of Defense guidance designed to minimize – to the extent practicable and without diminishing the effectiveness of military readiness activities – the incidental take of migratory birds." (Office of the Assistant

7.2 Outdoor Recreation and Public Access to Natural Resources

Applicability Statement

This section applies to all AF installations that maintain an INRMP. Schriever AFB is required to implement this element.

Program Overview/Current Management Practices

Near the athletic facility a paved jogging trail has been constructed. Lighting is available on the inner loop of this trail, and interpretive signs have been established along the trail to increase awareness of the natural surroundings for recreational users. In addition, some personnel opt to jog on an unimproved trail around the perimeter of the base.

Within the RA, the urban forest provides opportunities for birdwatching for onsite employees. A checklist of birds found on base by month could be developed to increase interest. There are no opportunities to hunt, trap, or fish at Schriever AFB. A watchable wildlife program, beyond that for installation employees and residents, is not warranted because there is no public access at this time and security measures limit the use of cameras and binoculars. In addition, there are no available on-base areas suitable for use of off-road vehicles, also known as all-terrain vehicles.

7.3 Conservation Law Enforcement

Applicability Statement

This section applies to all AF installations that maintain an INRMP. Schriever AFB is required to implement this element.

Program Overview/Current Management Practices

Historically, no conservation law enforcement measures or activities have been conducted on Schriever AFB due to an apparent lack of violations of natural resource laws and regulations. This lack of natural resources law enforcement implementation on the installation has negated the need for conservation law enforcement training and certifications.

A feasibility study for the implementation of conservation law enforcement on Front Range Air Force Bases was completed in 2015, and concluded with the recommendation that permanent law enforcement positions be stationed at the U.S. Air Force Academy and F.E. Warren AFB (Center for Environmental Management of Military Lands 2015). It was further recommended that the Air Force Academy conservation law enforcement officer (CLEO) assist with the rare conservation law enforcement issues that may occur on nearby Air Force bases, including Schriever AFB, on an as-needed basis. At present, Schriever AFB has not identified a need for permanent conservation law enforcement onsite.

7.4 Management of Threatened and Endangered Species, Species of Concern and Habitats

Applicability Statement

This section applies to AF installations that have threatened and endangered species, or species of conservation concern, on AF property. This section is applicable to Schriever AFB.

Program Overview/Current Management Practices

While it has been determined that no species listed as threatened or endangered by the USFWS regularly utilize lands occupied by the base, the state-listed threatened burrowing owl (also a USFWS BCC priority species), and state special concern black-tailed prairie dog do occur on base. The lark bunting, another BCC priority species, has also been documented on site. In addition, small populations of the globally rare plant species, plains ragweed, exist on Schriever AFB.

Prairie Dogs

The black-tailed prairie dog is a native species significant in its role as an ecosystem engineer; as social burrowing animals, their extensive underground burrows can cover hundreds of acres and significantly modify the structure of prairie soils. Schriever AFB prairie dog management priorities are to provide suitable, high-quality habitat for prairie dogs where their presence does not interfere with the installation mission or pose risks to human health, and to prevent encroachment into the Restricted Area and areas of human habitation.

Sylvatic plague is a primary ecological control on prairie dog populations and is caused by *Yersinia pestis*, the same organism responsible for bubonic plague in humans. Plague is transmitted between animals by fleas and outbreaks, or epizootics, typically result in 80-95% mortality in a prairie dog colony. Sylvatic plague causes widespread mortality in prairie dog populations in the Schriever AFB area on an irregular but frequent basis, typically every 2-5 years. Fleas can potentially transmit plague to household pets, other wildlife, and humans, though the risk of transmission is vanishingly low and has never occurred on Schriever AFB.

To manage black-tailed prairie dog populations in consideration of the species, the military mission, and human health, Schriever AFB has been divided into areas based on three levels of management (see Figure Prairie Dog Management Zones):

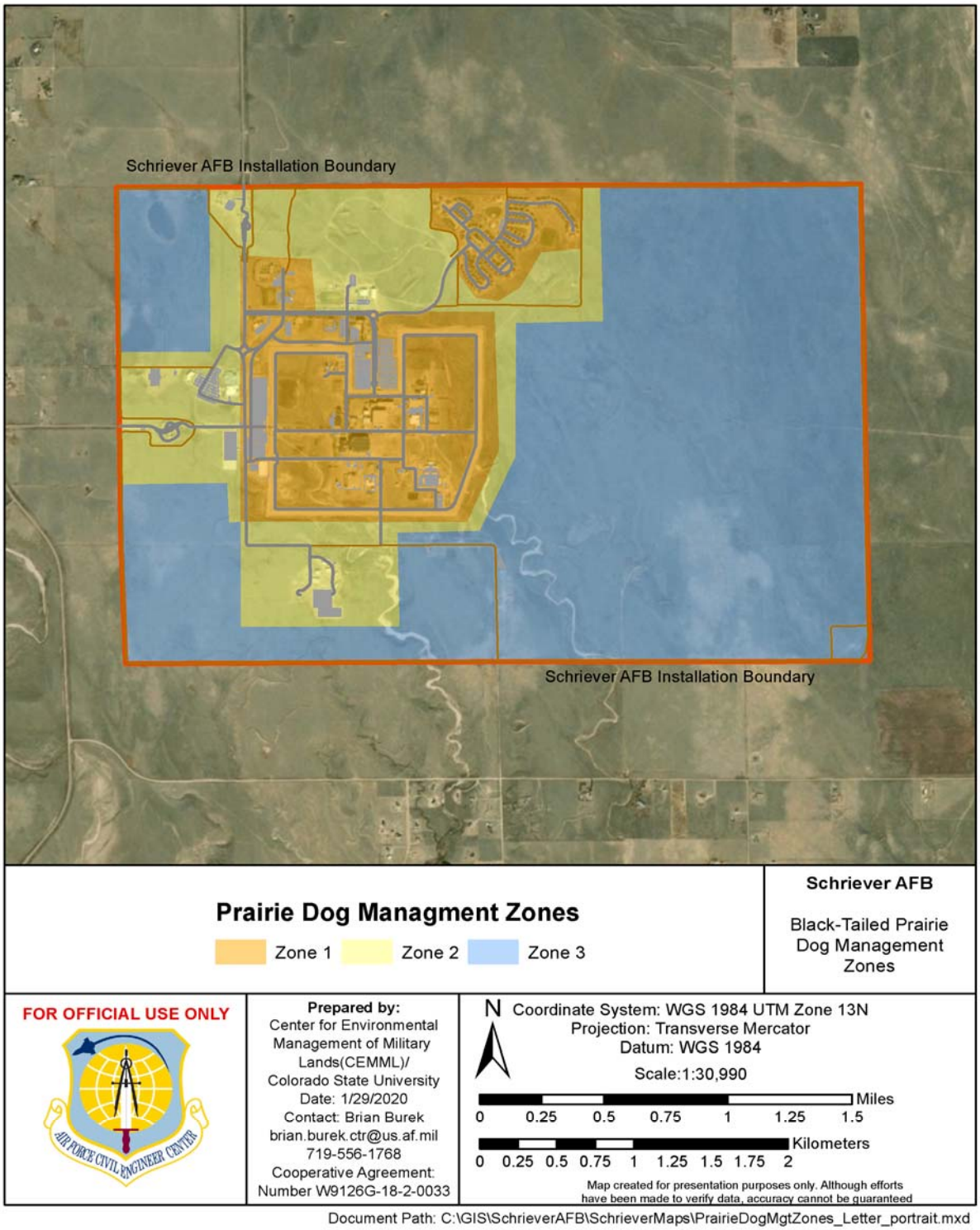
Zone 1: This management zone includes the high human impact areas such as the Child Development Center, Housing and Restricted Area. Prairie dogs colonies in this zone are automatically removed upon detection. Mission-critical underground infrastructure, such as fiber optic lines and sensors, is common in this area and must be protected from burrowing and foraging. Human health risks are highest in this area.

Zone 2: This management zone represents areas in close proximity to installation housing and recreation areas. While the presence of prairie dogs is tolerable in this zone, they present risks to personnel that require regular monitoring and management. Periods of high prairie dog population density and encroachment towards housing or childcare facilities may trigger a decision to pursue lethal control of the colony to limit risks of disease transmission and other human-wildlife conflicts.

Zone 3: These areas are maintained as prairie dog habitat and are not intensively utilized for recreation or military mission activities, but colonies in this zone are regularly monitored for encroachment towards Zone 1and 2 areas.

Prairie dog control can be achieved by either lethal or non-lethal means. Lethal removal is most often achieved through poisoning using 2 percent zinc phosphide baits, which are ingested, or aluminum phosphide pellets or carbon monoxide (CO) gas cartridges placed in the burrows as fumigants. These three methods are legal in Colorado; however, zinc phosphide and aluminum phosphide are restricted use agents under EPA guidelines and must be applied by a certified technician. Fumigants are most effective when used in moist soils in early spring. Gas cartridges are general use toxicants. These control measures can only be undertaken following a thorough survey of the target areas for nesting burrowing owls. Non-lethal removal can be achieved by live trapping and relocation of animals, but this management strategy is not regularly employed at Schriever AFB due to its labor-intensive nature. USDA APHIS personnel assist the installation in controlling animal populations where conflicts with mission or threats to workforce health or welfare occur in a cooperative agreement with the USFWS.

Through the Black-tailed Prairie Dog Management Zones, areas have been designated for maintaining healthy and stable prairie dog populations and consequently habitat for burrowing owls. Lethal prairie dog control during the months March through November can commence only after burrowing owl surveys show that no owls inhabit prairie dog burrows in the treatment area (Colorado Division of Wildlife 2008). Schriever AFB undertakes burrowing owl surveys prior to all lethal control efforts, even outside the required timeframe.



Prairie Dog Managment Zones

Other Wildlife

As noted in section 2.3.4, pollinator populations have been declining worldwide during the past several years. In 2017 the U.S. Air Force Pollinator Conservation Strategy and Reference Guide (U.S. Fish and Wildlife Service 2017) was published to help guide pollinator management on Air Force lands. Five goals and objectives were identified in the document:

- Conserve pollinator species of conservation concern
- Conserve and enhance pollinator habitat
- Reduce pesticide use and adverse impacts of pest control on pollinators
- Promote pollinator conservation through education and outreach
- Develop partnerships for pollinator conservation off-installation to lessen regulatory burdens resulting from federal listing processes

The above goals and objectives are intended to be carried out through implementation of respective installation INRMPs.

Open areas around the built environment on Schriever AFB generally host native vegetative communities. Furthermore, land restoration practices following soil disturbing operations call for revegetation with native species. However, recommended seed mixes will be reviewed to determine if pollinator friendly plant species can/should be added to the prescriptions. In addition, a review of ornamental species planted within the built environment should be undertaken to assess whether or not the proportion of pollinator friendly species can be improved upon, if not prioritized. To support the above actions, a memorandum from the DoD was developed in 2014 directing Military Departments to use pollinator friendly management prescriptions in the management of resources on military installations (Office of the Under Secretary of Defense 2014). Policies outlined include the use of native landscaping and minimizing the use of pesticides in sensitive habitats to the extent practicable and coordinating with other agencies when appropriate and feasible in matters pertaining to habitat and pollinator management.

Plant Communities

Rare plant communities at Schriever AFB are located in undeveloped areas not used for mission or recreation activities. Management activities are limited to monitoring. The presence and extent of plains ragweed is monitored on an annual basis and prescribed burning would not be undertaken in areas of known occurrence. The rare Western Wheatgrass-Spikerush Wet Meadow plant community is situated in an area where development will not occur.

7.5 Water Resource Protection

Applicability Statement

This section applies to AF installations that have water resources. This section **is not** applicable to Schriever AFB.

Program Overview/Current Management Practices

Due to the USACE no Waters of the United States designation there are no water resources that require protection on Schriever AFB. Storm water management and spill control plans are all managed as best management practices.

7.6 Wetland Protection

Applicability Statement

This section applies to AF installations that have existing wetlands on AF property. This section **is not** applicable to Schriever AFB.

Program Overview/Current Management Practices

Due to the USACE no Waters of the United States designation there were found to be no jurisdictional wetlands on Schreiver AFB.

7.7 Grounds Maintenance

Applicability Statement

This section applies to AF installations that perform ground maintenance activities that could impact natural resources. This section is applicable to Schriever AFB.

Program Overview/Current Management Practices

Effective grounds maintenance at Schriever AFB supports preservation of the historical character, improvement of the image, enhancement of the quality of life, conservation of water and natural resources, and reduction of landscape maintenance.

Landscaped Areas

Maintenance of the grounds at Schriever AFB includes weeding, watering, mowing, fertilizing, and aerating.. The base controls weeds on improved grounds either manually or with herbicides. Disturbed areas are reseeded as soon as possible with a native seed mixture that is adapted to the soils and climatic conditions on the base (see table Native Seed Mixtures).

Issues related to landscaping are addressed in the Schriever AFB Xeriscape and Water Conservation Plan and the United States Air Force Landscape Design Guide.

Urban Forest

A forestry management plan entitled Urban Forestry Management Plan Survey Report Schriever AFB, CO (World Tree, Inc. 2000) was developed to provide a method for optimizing the aesthetic and environmental quality benefits available from the urban forest. An inventory of the location and condition of trees at the base also was performed as part of this report.

Schriever AFB currently maintains all base trees through a 5-year open-ended contract. Maintenance includes planting, pruning, spraying, and irrigation/watering. On an “as needed” basis, the contractor performs emergency storm work and removal. Additional maintenance measures address concerns regarding the safety and condition of the forest, perpetuation of the forest, and protection of environmental quality.

Schriever AFB has received been recognized as a “Tree City USA” for 21 years.

Native Seed Mixtures

Native Plant Species	Percent of Seed Mixture
Sideoats grama	15-20
Western wheatgrass	10-15
Little bluestem	10-15
Prairie sandreed	10-15
Big bluestem	10-15
Needle and thread	5-10
Blue grama	0-10
Perennial rye	0-10

7.8 Forest Management

Applicability Statement

This section applies to AF installations that maintain forested land on AF property. This section is not applicable to Schriever AFB.

Program Overview/Current Management Practices

Situated on the shortgrass prairie as it is, Schriever AFB has no natural forest resource to manage.

7.9 Wildland Fire Management

Applicability Statement

This section applies to AF installations with unimproved lands that present a wildfire hazard and/or installations that utilize prescribed burns as a land management tool. This section is applicable to Schriever AFB.

Program Overview/Current Management Practices

In accordance with the 2001 Federal Wildland Fire Management Policy, to which the Department of Defense is a signatory agency, and AFI 32-7064, Wildland Fire Management Plans (WFMP) are required for Air Force installations with unimproved grounds that present a wildfire hazard as well as installations that use prescribed burns as a land management tool.

At Schriever AFB, a WFMP has been developed to reduce threats to base personnel and mission due to wildfire potential, protect and enhance valuable natural resources, and implement ecosystem management goals and objectives. The WFMP establishes responsibilities and procedures for prescribed fire management and the prevention, preparedness, and suppression of grassland fires. Implementing wildfire suppression and prescribed fire procedures will mitigate potential negative impacts to the base's mission.

Four fire management zones have been designated on base (see figure Fire Management Zones) as follows:

Zone 1 – Developed Area:

- **Suppression Priority:** Moderate
- **Prescribed Fire Emphasis:** Fire exclusion area as there is a presence of well-established firebreaks and sprinkler system around the perimeter of the Security Area, plus the 200 foot defensible space that is mown regularly around the housing development

Zone 2 – Potential Base Expansion Area:

- **Suppression Priority:** High
- **Prescribed Fire Emphasis:** Until developed, grassland vegetation will be managed by mowing the perimeter at the housing development and the east side of the cantonment area. The playas will be fire exclusion areas.

Zone 3 – Security Emphasis Area:

- **Suppression Priority:** High
- **Prescribed Fire Emphasis:** Structures in this zone (Visitor Center and buildings west of secure area) have less effective firebreaks than Zone 1. Prescribed burning will be used along with mowing to maintain short grass cover for security specifications.

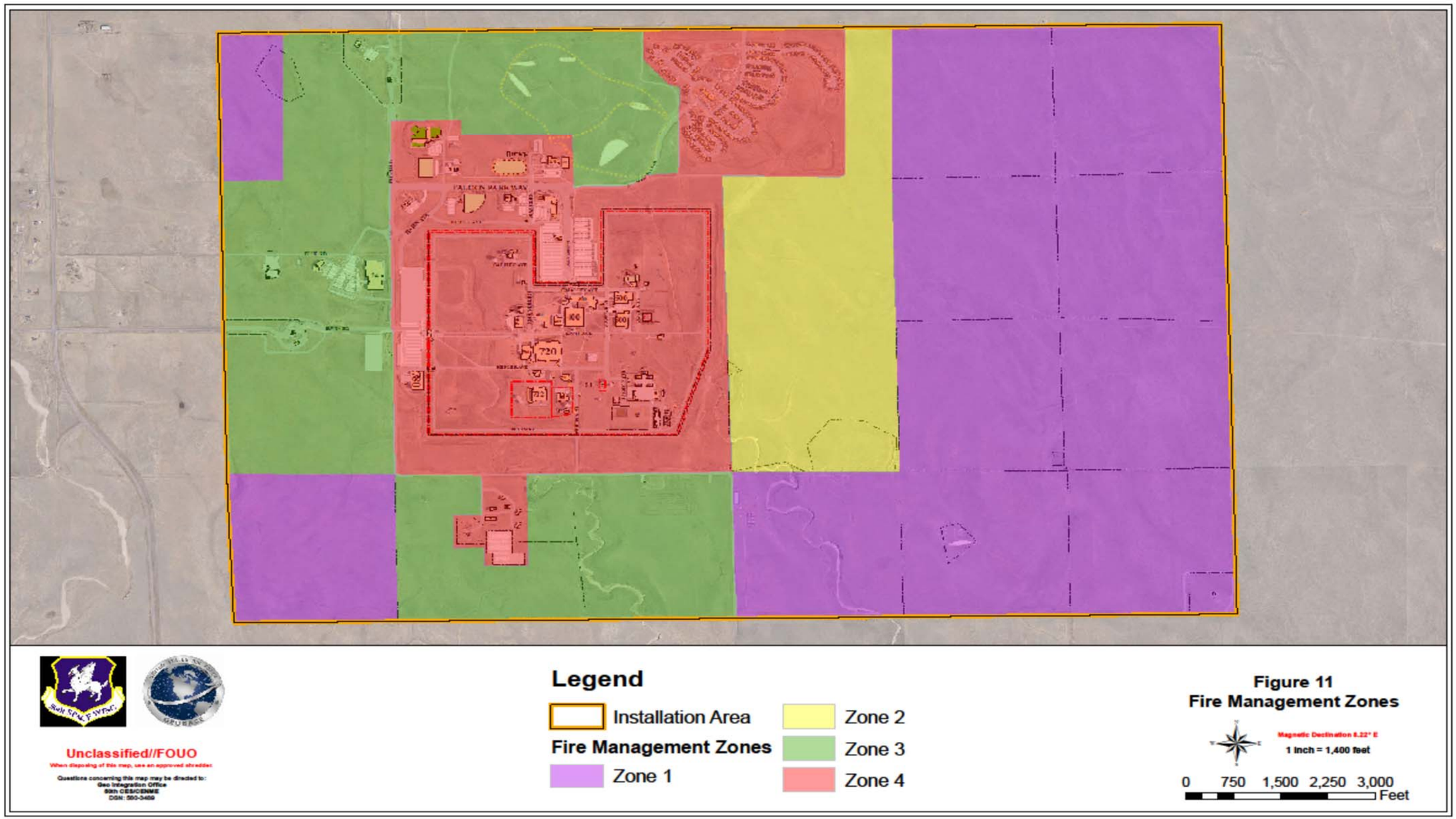
Zone 4 – Natural Resource Management Area:

- **Suppression Priority:** Low
- **Prescribed Fire Emphasis:** Once resource objectives have been determined, grassland vegetation will be managed using prescribed fire to enhance habitat for native shortgrass prairie species of plants and animals.

Prescribed burning is often used as a safety precaution, eliminating excessive fuel loading to preclude or lessen the catastrophic effects of wildfires. It can also be an effective resource management tool by releasing nutrients pent up in plant litter to the soils, especially in the absence of grazing regimes. Furthermore, it is sometimes used to eradicate or control noxious weeds.

Because there is no documented information on the effects of fire on the plains ragweed, prescribed fire should be excluded from areas known to contain this species. An alternative to exclusion would be to burn a small plot to measure effects over subsequent growing seasons. If a prescribed burning program is implemented in the future, the biology and survivorship of this species as it relates to the influence of fire will be researched thoroughly and a plan forward will reflect the results of that research. Further, prescribed burns will be conducted outside the nesting season for migratory birds, generally considered to be early April to mid-July, so as not to negatively impact ground-nesting prairie species (U.S. Fish and Wildlife Service 2011).

The WFMP represents an operational component plan to support this INRMP (See Chapter 15.0 Associated Plans).



Fire Management Zones

7.10 Agricultural Outleasing

Applicability Statement

This section applies to AF installations that lease eligible AF land for agricultural purposes. This section is not applicable to Schriever AFB.

Program Overview/Current Management Practices

While there was past livestock grazing on Schriever AFB on an outlease basis is no longer feasible given current Air Force antiterrorism and force protection requirements. Outleased grazing will not occur on Schriever AFB in the future.

7.11 Integrated Pest Management Program

Applicability Statement

This section applies to AF installations that perform pest management activities in support of natural resources management, e.g. invasive species, forest pests, etc. This section is applicable to Schriever AFB.

Program Overview/Current Management Practices

Pest Management

Pests are defined as weeds (terrestrial and aquatic), insects and related lower animals, domestic and feral rodents, birds, feral predatory animals, snakes, nematodes, snails, algae, fungal plant diseases, and other organisms, other than domestic animals, that are not desirable. Control programs are carried out when pests impair safe and efficient land use, pose health or safety hazards to humans or animals, or impair military operations. Integrated Pest Management (IPM) procedures are to be used when practical. Management must ensure that pests are controlled effectively and economically, while contamination of the environment and risks to human health caused by pest control measures are held to a minimum (U.S. Air Force 2013).

The IPM Program is managed by 21 CES pest management office at Peterson AFB, CO, under a functional MOU dated 2 March 2019. Under this MOU, the 21st Space Wing Integrated Pest Management Plan is expanded to include Schriever AFB information and responsibilities, and 21 CES provides pest abatement and control services to both installations. The IPM Program strives to minimize, to the maximum possible extent, the impact of unwanted or undesirable animals, insects, and plants on the mission of the base and its tenants. These impacts arise from disease, safety hazards and morale detractions that can occur from the interaction of people and such pests. Pests on base include mosquitoes, cockroaches, flies, venomous insects, rats, mice, rabbits, ticks, mites, fleas, foraging ants, skunks, snakes, and bats, as well as noxious weeds and invasive plants.

The IPM program does not include management of black-tailed prairie dogs, an activity which falls under the installation natural resources program. However, as previously discussed, dense prairie dog populations in management Zone 1 or Zone 2 areas may be lethally removed as pests. In an agreement between the USFWS and USDA APHIS dated 24 July 2019, USDA APHIS personnel assist Schriever AFB with prairie dog control at the request of the natural resources program manager and/or the USFWS liaison.

Invasive Species

Executive Order 13112 of February 3, 1999, Invasive Species, the Sikes Act as amended (16 U.S.C. 670), and various other federal and state regulations and policies require control of invasive species as well as reductions in their ecological and economic impact. Nine state-listed noxious plant species were identified at Schriever AFB during a survey conducted in 2016 (Smith et al. 2017). Each of these species, identified in the Current Vegetative Cover section of this plan, is difficult to control and poses an invasive threat to the native vegetation.

Schriever AFB uses the state noxious weed classification system, presented in section 2.3.2.2, Current Vegetative Cover, as guidance in prioritizing the management of noxious weeds on federally controlled installations. 7 USC 2814, Management of Undesirable Plants on Federal Lands requires cooperation with the state to manage undesirable plant species.The most problematic invasive species at Schriever AFB are Canada thistle (*Cirsium arvense*) and field bindweed (*Convolvulus arvensis*). Removal and control of all noxious and invasive plant species on base is given special management consideration through the Invasive

Plant Species Control Plan (North Wind 2012a). This plan also describes strategies for preventing the spread of invasive plants and the establishment of additional invasive species. Noxious weed control will be implemented on Schriever AFB annually in accordance with the Invasive Plant Species Control Plan (North Wind 2012a).

Pest management at Schriever AFB relies on physical controls, prevention of infestation, and eradication. Physical controls include facility design and pest exclusion barriers or capture. Infestation prevention includes sanitation and non-pesticide application of controls in specific areas. Eradication includes point application and area application of pesticides for a specific targeted pest. Chemical pesticides are used only after non-chemical methods prove to be non-sufficient to eradicate pests or inadequate to meet mission requirements. Only pesticides under the approved listing of DoD pesticides must be used. Any chemical or biological pesticides will be used only after minimum risk to the mission, base personnel, the civilian community, and the environment has been determined. All pesticides shall be applied in a manner that complies with all applicable laws and regulations (U.S. Air Force 2013).

In 2016 less than one acre of Canada thistle was treated with chemical application in control efforts. In 2017 approximately 17 acres of Canada and musk thistles, and diffuse knapweed, were treated.

7.12 Bird/Wildlife Aircraft Strike Hazard (BASH)

Applicability Statement

This section applies to AF installations that maintain a BASH program to prevent and reduce wildlife-related hazards to aircraft operations. This section is not applicable to Schriever AFB.

Program Overview/Current Management Practices

Schriever AFB does not have an air mission.

7.13 Coastal Zone and Marine Resources Management

Applicability Statement

This section applies to AF installations that are located along coasts and/or within coastal management zones. This section is not applicable to Schriever AFB.

Program Overview/Current Management Practices

Schriever AFB is not located near any coastal zone or marine resources.

7.14 Cultural Resources Protection

Applicability Statement

This section applies to AF installations that have cultural resources that may be impacted by natural resource management activities. This section is applicable to Schriever AFB.

Program Overview/Current Management Practices

The entire installation had archaeological surveys conducted in the 1980s and 1990s. There were no cultural resources identified during those surveys that were determined to be eligible for inclusion in the National Register of Historic Places (NRHP). However, through subsequent consultation work, the Colorado State

Historic Preservation Office (SHPO) and the Native American Tribes (Tribes) with an expressed cultural affiliation to Schriever AFB landholdings, have indicated that the surveys are no longer current and use outdated methodologies, geolocation methods, and information. Installation-wide archaeological surveys and architectural inventories will be conducted in the spring of calendar year 2020 and will rectify these identified shortcomings. As of 2019, Schriever AFB has a current and signed Integrated Cultural Resources Management Plan (ICRMP).

If natural resource management activities involving ground disturbance result in inadvertent discovery of human remains, archaeological features or artifacts, procedures outlined in AFI 32-7065 and the ICRMP will be followed, further ground disturbance activities in the area will be suspended, and cultural resource specialists will be contacted immediately regarding the situation.

7.15 Public Outreach

Applicability Statement

This section applies to all AF installations that maintain an INRMP. Schriever AFB is required to implement this element.

Program Overview/Current Management Practices

Public access to the base is restricted, requiring scheduled visitors to sign in at the main gate with photo identification and proof of vehicle registration and insurance. However, developing outreach programs for military personnel and the general public is a high priority at Schriever AFB as long as such programs can be accomplished within military mission constraints.

Most importantly, information on natural and cultural resources management has been reinstated in the newcomer orientation presentations. Schriever AFB also hosts Earth Day and Arbor Day festivities each year, promoting native species, xeriscape landscaping, and water conservation. Additional events could be planned in coordination with ribbon-cutting ceremonies for new construction or anniversaries of the base's commission. For the public at large, outreach opportunities include dissemination of natural resources management information via the base's web site or the local media.

7.16 Geographic Information Systems (GIS)

Applicability Statement

This section applies to all AF installations that maintain an INRMP, since all geospatial information must be maintained within the AF GeoBase system. Schriever AFB is required to implement this element.

Program Overview/Current Management Practices

Schriever AFB has full GIS and AutoCAD capabilities for assembling, storing, manipulating, and displaying geographically referenced information. The Air Force is taking a proactive approach to implementing GIS at installations through its GeoBase initiative, an effort to centralize mapping processes. The GeoBase vision is "One Installation…One Map" with a mission to "attain, maintain and sustain one geospatial infrastructure supporting all installation requirements." This geospatial infrastructure includes the people, processes, and resources used in the collection, analysis, and display of geo-referenced data to support the installation mission. Existing mission systems and processes are enhanced by visualizing their assets and information via an installation map.

Successful implementation of this INRMP involves the collection, analysis, and synthesis of data sets and their incorporation into the decision making process. GIS data layers are made available to the Natural Resources Manager, and GIS support may be obtained via the installation GeoBase Office within the Civil Engineer Squadron. GIS represents a mechanism to communicate across all base operations. GIS data sets resulting from future natural resource inventories will be submitted to the 50 CES GeoBase Office so that the most recent digital format data can be stored, maintained, and made available for future mapping requirements.

8.0 MANAGEMENT GOALS AND OBJECTIVES

The installation establishes long term, expansive goals and supporting objectives to manage and protect natural resources while supporting the military mission. Goals express a vision for a desired condition for the installation's natural resources and are the primary focal points for INRMP implementation. Objectives indicate a management initiative or strategy for specific long or medium range outcomes and are supported by projects. Projects are specific actions that can be accomplished within a single year. Also, in cases where off-installation land uses may jeopardize AF missions, this section may list specific goals and objectives aimed at eliminating, reducing or mitigating the effects of encroachment on military missions. These natural resources management goals for the future have been formulated by the preparers of the INRMP from an assessment of the natural resources, current condition of those resources, mission requirements, and management issues previously identified. Below are the integrated goals for the entire natural resources program.

The installation goals and objectives are displayed in the 'Installation Supplement' section below in a format that facilitates an integrated approach to natural resource management. By using this approach, measurable objectives can be used to assess the attainment of goals. Individual work tasks support INRMP objectives. The projects are key elements of the annual work plans and are programmed into the conservation budget, as applicable.

Installation Supplement – Management Goals and Objectives

GOAL 1: KEEP SCHRIEVER AFB INRMP CURRENT

- OBJECTIVE 1.1: Upgrade and Maintain Schriever AFB Natural Resource Data Base
  - PROJECT 1.1.1: Monitor Schriever AFB plains ragweed population annually
  - PROJECT 1.1.2: Monitor black-tailed prairie dog colonies annually
  - PROJECT 1.1.3: Conduct burrowing owl surveys annually
  - PROJECT 1.1.4: Inventory Schriever AFB's overall biological resources
- OBJECTIVE 1.2: Review and update the Schriever AFB INRMP annually, as necessary
  - PROJECT 1.2.1: Update the INRMP annually
  - PROJECT 1.2.2: Review the INRMP annually in coordination with the USFWS and CPW

GOAL 2: CONTROL NATIVE AND NON-NATIVE INVASIVE SPECIES

- OBJECTIVE 2.1: As necessary, control black-tailed prairie dog expansion into Schriever AFB RA and other off-limit areas
  - PROJECT 2.1.1: Monitor prairie dog colony expansion as they approach and/or expand into off-limits areas
  - PROJECT 2.1.2: As necessary and practicable, retrofit fences near off-limits areas with exclusionary devices to deter prairie dog expansion into these areas

  - PROJECT 2.1.3: Remove prairie dogs that have expanded into Schriever AFB off-limits areas. If practical, nonlethal methods of removal will be attempted first. If these methods are unsuccessful, or if nonlethal removal is not feasible, lethal means of removal will be employed.
- OBJECTIVE 2.2: As necessary, control noxious weeds on Schriever AFB
  - PROJECT 2.2.1: Implement weed control measures on noxious weeds, targeting especially A- and B-listed species
  - PROJECT 2.2.2: Monitor success of weed control measures
  - PROJECT 2.2.3: Implement noxious weed surveys
  - PROJECT 2.2.4: Plant disturbed areas with native grass seed to inhibit weed infestation

9.0 INRMP IMPLEMENTATION, UPDATE, AND REVISION PROCESS

9.1 Natural Resources Management Staffing and Implementation

Implementation of this INRMP is dependent on work plans to accomplish projects, professionally trained staff, annual reviews of plan effectiveness, and monitoring plans.

Implementation

The BCE is primarily responsible for the overall success of the Natural Resources Program. Specifically, the Natural Resources Manager is responsible for the successful implementation of the INRMP. Most of the activities called for in the INRMP can be undertaken by the Manager him/herself. When assistance is needed, the Manager can call upon cooperators from state or federal agencies, for example USDA APHIS agents may help in pest management activities. The Natural Resources Manager will also coordinate the annual INRMP reviews with Sikes Act cooperators and update the plan in accordance with the results of that review process.

Natural Resources Management Staffing

As indicated above, the Natural Resources Manager is the primary individual responsible for ensuring successful implementation of the INRMP. That individual will generally be a GS 0486 Wildlife Biologist. The Chief of Environmental Element is the next in the chain of command in guaranteeing that the obligations set forth in the INRMP are met. The Chief is responsible for ensuring that the Natural Resources Manager has the needed resources available to accomplish his/her job. Other individuals and services, such as the Pest Manager, the Chief of the installation Fire Department, and the Director of Public Works may also directly or indirectly play a role in the successful implementation of the INRMP.

As described in section 7.1, agreements between the USAF and the USFWS allow for USFWS staffing assistance in implementing Air Force Natural Resource Management Programs. Aside from assisting with day-to-day resource management activities, the onsite USFWS Wildlife Biologist focuses on monitoring and managing that agency's trust resources: sensitive, threatened and endangered species and migratory birds.

9.2 Monitoring INRMP Implementation

The tasks identified in Chapter 10, Work Plans, will be reviewed annually for completion in each respective fiscal year. This exercise will be undertaken in conjunction with the annual review process with Sikes Act cooperators, namely the USFWS and CPW.

The Environmental Office must monitor the progress of natural resource projects to measure their success and recommend adjustments in management actions, if necessary, that increase progress toward achieving the goals and objectives outlined in this INRMP.

9.3 Annual INRMP Review and Update Requirements

The Natural Resource Manager is responsible for maintaining the currency of the INRMP. This is accomplished through annual review and incorporating minor updates. Major revisions, due to significant changes to the site, regulations, or base mission, will be implemented through projects under the direction of the Natural Resource Manager.

In coordination with the USFWS and CPW, the Natural Resource Manager will conduct annual reviews to evaluate the progress of INRMP implementation and to make recommendations on how management actions need to be adjusted to improve the efficiency and effectiveness of the plan. Components will include the review of all goals/objectives/projects, monitoring data, undertakings that required submission of Air Force Forms 332 or 813, and stakeholder involvement activities.

A critical consideration is to ensure that there is no net loss of military capability as a result of implementing the INRMP. Specifically, this evaluation will require careful examination of management objectives from which annual projects are developed. There may be instances in which a "net loss" may be unavoidable in order to fulfill regulatory requirements other than the Sikes Act (e.g., complying with a biological opinion under the provisions of the ESA). Loss of mission capability in these instances will be identified in the INRMP and a discussion included of measures taken to recapture the net loss.

Consensus should be reached on (1) whether or not the INRMP was fully implemented, and (2) whether or not the management scheme was effective. If no significant revisions are required, the parties should sign a memorandum stating that the plan was fully implemented and that management schemes are effective. If it is determined that the plan is ineffective or needs substantial revision, the update process will be initiated.

These annual reviews will help keep the INRMP current and relevant with the incorporation of new projects, additional data, new understanding of natural processes and species, knowledge of other base operations impacting natural resources, and lessons learned from completed and ongoing projects.

INRMP Update and Revision Process

To ensure the continued utility of this plan, periodic updates will be conducted that account for changes in the military mission, condition of natural resources, the ecosystem, and regulatory requirements. More specifically, the INRMP will be updated for the following reasons: (1) when mission interference or lack of mission support requires a change in natural resource management direction; (2) when ecological monitoring data reveals management actions are having a negative effect on the resources and have reached a threshold of significance, requiring a fundamental change in management methods; and (3) when new laws or regulations require additions or deletions of management activities.

All updates to the INRMP will have an associated report that identifies the type of update (i.e., supplemental, removal, or new), description of the project or action, and articulation of goals/objectives for the project or action. Relevant INRMP sections and pages should be referenced as well as contingencies and completion of projects or actions. An INRMP Master Update List will be maintained by the Natural Resource Manager to consolidate all updates based on the annual reviews. In addition, the annual update process will include adding a year to the Annual Work Plan section.

The Environmental Office must monitor the progress of natural resource projects to measure their success and recommend adjustments in management actions, if necessary, that increase progress toward achieving the goals and objectives outlined in this INRMP.

10.0 ANNUAL WORK PLANS

The INRMP Annual Work Plans are included in this section. These projects are listed by fiscal year, including the current year and four succeeding years. For each project and activity, a specific timeframe for implementation is provided (as applicable), as well as the appropriate funding source, and priority for implementation. The work plans provide all the necessary information for building a budget within the AF framework. Priorities are defined as follows:

1. High: The INRMP signatories assert that if the project is not funded the INRMP is not being implemented and the Air Force is non-compliant with the Sikes Act; or that it is specifically tied to an INRMP goal and objective and is part of a "Benefit of the Species" determination necessary for ESA Sec 4(a)(3)(B)(i) critical habitat exemption.
2. Medium: Project supports a specific INRMP goal and objective, and is deemed by INRMP signatories to be important for preventing non-compliance with a specific requirement within a natural resources law or by EO 13112 on Invasive Species. However, the INRMP signatories would not contend that the INRMP is not be implemented if not accomplished within programmed year due to other priorities.
3. Low: Project supports a specific INRMP goal and objective, enhances conservation resources or the integrity of the installation mission, and/or support long-term compliance with specific requirements within natural resources law; but is not directly tied to specific compliance within the proposed year of execution.

Annual Work Plans FY20 Projects	**OPR**	**Funding Source**	**Priority Level**
Project 1.1.1: Monitor plains ragweed population	USFWS	In house	Low
Project 1.1.2: Monitor prairie dog colonies	USFWS	In house	Medium
Project 1.1.3: Conduct burrowing owl surveys	USFWS	In house	Medium
Project 1.1.4: Inventory overall biological resources and monitor/ apply management actions, if necessary, to protect sensitive/rare floral and faunal species	USFWS	Project GLEN403020	Medium
Project 1.2.1: Review the INRMP annually in coordination with the USFWS and CPW	50 CES/CEI	In house	High
Project 1.2.2: Update the INRMP as necessary per the review process	USFWS	In house	High
Project 2.1.3: Remove prairie dogs that have expanded into Schriever AFB off-limits areas	50 CES/CEO	O&M	High
Project 2.2.1: Implement noxious weed control measures	USFWS	Project GLENOS700520	Medium
Project 2.2.2: Monitor success of weed control measures	USFWS	Project GLENOS700520	Medium

Project 2.2.4: Plant disturbed areas with native seed to inhibit weed infestation	USFWS	Project GLENOS033920	Medium

Annual Work Plans FY21 Projects	**OPR**	**Funding Source**	**Priority Level**
Project 1.1.1: Monitor plains ragweed population	USFWS	In house	Low
Project 1.1.2: Monitor prairie dog colonies	USFWS	In house	Medium
Project 1.1.3: Conduct burrowing owl surveys	USFWS	In house	Medium
Project 1.1.4: Inventory overall biological resources and monitor/ apply management actions, if necessary, to protect sensitive/rare floral and faunal species	USFWS	Project GLEN403021	Medium
Project 1.2.1: Review the INRMP annually in coordination with the USFWS and CPW	50 CES/CEI	In house	High
Project 1.2.2: Update the INRMP as necessary per the review process	USFWS	In house	High
Project 2.1.3: Remove prairie dogs that have expanded into Schriever AFB off-limits areas	50 CES/CEO	O&M	High
Project 2.2.1: Implement noxious weed control measures	USFWS	Project GLENOS700521	Medium
Project 2.2.2: Monitor success of weed control measures	USFWS	Project GLENOS700521	Medium
Project 2.2.4: Plant disturbed areas with native seed to inhibit weed infestation	USFWS	Project GLENOS033921	Medium

Annual Work Plans FY22 Projects	**OPR**	**Funding Source**	**Priority Level**
Project 1.1.1: Monitor plains ragweed population	USFWS	In house	Low
Project 1.1.2: Monitor prairie dog colonies	USFWS	In house	Medium
Project 1.1.3: Conduct burrowing owl surveys.	USFWS	In house	Medium
Project 1.1.4: Inventory overall biological resources and monitor/ apply management actions, if necessary, to protect sensitive/rare floral and faunal species	USFWS	Project GLEN403022	Medium

Project 1.2.1: Review the INRMP annually in coordination with the USFWS and CPW	50 CES/CEI	In house	High
Project 1.2.2: Update the INRMP as necessary per the review process	USFWS	In house	High
Project 2.1.3: Remove prairie dogs that have expanded into Schriever AFB off-limits areas	50 CES/CEO	O&M	High
Project 2.2.1: Implement noxious weed control measures	USFWS	Project GLENOS700522	Medium
Project 2.2.2: Monitor success of weed control measures	USFWS	Project GLENOS700522	Medium
Project 2.2.4: Plant disturbed areas with native seed to inhibit weed infestation	USFWS	Project GLENOS033922	Medium

11.0 REFERENCES

11.1 Standard References *(Applicable to all AF installations)*

1. AFI 32-7064, *Integrated Natural Resources Management*
2. Sikes Act
3. eDASH Natural Resources Program Page
4. Natural Resources Playbook – a Internal AF reference available at https://cs1.eis.af.mil/sites/ceportal/CEPlaybooks/NRM2/Pages/

11.2 Installation References

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12.0 ACRONYMS

12.1 Standard Acronyms (Applicable to all AF installations)

- eDASH Acronym Library
- Natural Resources Playbook – Acronym Section
- U.S. EPA Terms & Acronyms

12.2 Installation Acronyms

- **AFSCN -** Air Force Satellite Control Network
- **BCC -** Birds of Conservation Concern
- **BCR -** Bird Conservation Region
- **CNPH -** Colorado Natural Heritage Program
- **CPW -** Colorado Parks and Wildlife
- **FYDP -** Future Year Defense Program
- **NASA -** National Aeronautics and Space Administration
- **RA -** Restricted Area
- **RF -** Radio Frequency
- **SAC -** Schriever Activity Center
- **SH -** State Highway
- **USSF –** United States Space Force

13.0 DEFINITIONS

13.1 Standard Definitions (Applicable to all AF installations)

- Natural Resources Playbook – Definitions Section

13.2 Installation Definitions

- N/A

14.0 APPENDICES

Appendix A. Annotated Summary of Key Legislation Related to Design and Implementation of the INRMP

Federal Public Laws and Executive Orders	
National Defense Authorization Act of 1989, Public Law (P.L.) 101-189; Volunteer Partnership Cost-Share Program	Amends two Acts and establishes volunteer and partnership programs for natural and cultural resources management on DoD lands.
Defense Appropriations Act of 1991, P.L. 101-511; Legacy Resource Management Program	Establishes the "Legacy Resource Management Program" for natural and cultural resources. Program emphasis is on inventory and stewardship responsibilities of biological, geophysical, cultural, and historic resources on DoD lands, including restoration of degraded or altered habitats.
EO 11514, Protection and Enhancement of Environmental Quality	Federal agencies shall initiate measures needed to direct their policies, plans, and programs to meet national environmental goals. They shall monitor, evaluate, and control agency activities to protect and enhance the quality of the environment.
EO 11593, Protection and Enhancement of the Cultural Environment	All Federal agencies are required to locate, identify, and record all cultural resources. Cultural resources include sites of archaeological, historical, or architectural significance.
EO 11987, Exotic Organisms	Agencies shall restrict the introduction of exotic species into the natural ecosystems on lands and waters which they administer.
EO 11988, Floodplain Management	Provides direction regarding actions of Federal agencies in floodplains, and requires permits from state, territory and Federal review agencies for any construction within a 100-year floodplain and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for acquiring, managing and disposing of Federal lands and facilities.
EO 11989, Off-Road vehicles on Public Lands	Installations permitting off-road vehicles to designate and mark specific areas/trails to minimize damage and conflicts, publish information including maps, and monitor the effects of their use. Installations may close areas if adverse effects on natural, cultural, or historic resources are observed.
EO 11990, Protection of Wetlands	Requires Federal agencies to avoid undertaking or providing assistance for new construction in wetlands unless there is no practicable alternative, and all practicable measures to minimize harm to wetlands have been implemented and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.
EO 12088, Federal Compliance With Pollution Control Standards	This EO delegates responsibility to the head of each executive agency for ensuring all necessary actions are taken for the prevention, control, and abatement of environmental pollution. This order gives the U.S. Environmental Protection Agency (US EPA) authority to conduct

Federal Public Laws and Executive Orders	
	reviews and inspections to monitor Federal facility compliance with pollution control standards.
EO 12898, Environmental Justice	This EO requires certain federal agencies, including the DoD, to the greatest extent practicable permitted by law, to make environmental justice part of their missions by identifying and addressing disproportionately high and adverse health or environmental effects on minority and low-income populations.
EO 13112, Exotic and Invasive Species	To prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds	The U.S. Fish and Wildlife Service (USFWS) has the responsibility to administer, oversee, and enforce the conservation provisions of the Migratory Bird Treaty Act, which includes responsibility for population management (e.g., monitoring), habitat protection (e.g., acquisition, enhancement, and modification), international coordination, and regulations development and enforcement.
United States Code	
Animal Damage Control Act (7 U.S.C. § 426-426b, 47 Stat. 1468)	Provides authority to the Secretary of Agriculture for investigation and control of mammalian predators, rodents, and birds. DoD installations may enter into cooperative agreements to conduct animal control projects.
Bald and Golden Eagle Protection Act of 1940, as amended; 16 U.S.C. 668-668c	This law provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.
Clean Air Act, (42 U.S.C. § 7401– 7671q, July 14, 1955, as amended)	This Act, as amended, is known as the Clean Air Act of 1970. The amendments made in 1970 established the core of the clean air program. The primary objective is to establish Federal standards for air pollutants. It is designed to improve air quality in areas of the country which do not meet Federal standards and to prevent significant deterioration in areas where air quality exceeds those standards.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (Superfund) (26 U.S.C. § 4611–4682, P.L. 96-510, 94 Stat. 2797), as amended	Authorizes and administers a program to assess damage, respond to releases of hazardous substances, fund cleanup, establish clean-up standards, assign liability, and other efforts to address environmental contaminants. Installation Restoration Program guides cleanups at DoD installations.
Endangered Species Act (ESA) of 1973, as amended; P.L. 93-205, 16 U.S.C. § 1531 et seq.	Protects threatened, endangered, and candidate species of fish, wildlife, and plants and their designated critical habitats. Under this law, no Federal action is allowed to jeopardize the continued existence of an endangered or threatened species. The ESA requires consultation with the USFWS and the NOAA Fisheries (National Marine Fisheries Service) and the preparation of a biological evaluation or a biological

Federal Public Laws and Executive Orders	
	assessment may be required when such species are present in an area affected by government activities.
Federal Aid in Wildlife Restoration Act of 1937 (16 U.S.C. § 669–669i; 50 Stat. 917) (Pittman-Robertson Act)	Provides Federal aid to states and territories for management and restoration of wildlife. Fund derives from sports tax on arms and ammunition. Projects include acquisition of wildlife habitat, wildlife research surveys, development of access facilities, and hunter education.
Federal Environmental Pesticide Act of 1972	Requires installations to ensure pesticides are used only in accordance with their label registrations and restricted-use pesticides are applied only by certified applicators.
Federal Land Use Policy and Management Act, 43 U.S.C. § 1701–1782	Requires management of public lands to protect the quality of scientific, scenic, historical, ecological, environmental, and archaeological resources and values; as well as to preserve and protect certain lands in their natural condition for fish and wildlife habitat. This Act also requires consideration of commodity production such as timbering.
Federal Noxious Weed Act of 1974, 7 U.S.C. § 2801–2814	The Act provides for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health.
Federal Water Pollution Control Act (Clean Water Act [CWA]), 33 U.S.C. §1251–1387	The CWA is a comprehensive statute aimed at restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. Primary authority for the implementation and enforcement rests with the US EPA.
Fish and Wildlife Conservation Act (16 U.S.C. § 2901–2911; 94 Stat. 1322, PL 96-366)	Installations encouraged to use their authority to conserve and promote conservation of nongame fish and wildlife in their habitats.
Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)	Directs installations to consult with the USFWS, or state or territorial agencies to ascertain means to protect fish and wildlife resources related to actions resulting in the control or structural modification of any natural stream or body of water. Includes provisions for mitigation and reporting.
Lacey Act of 1900 (16 U.S.C. § 701, 702, 32 Stat. 187, 32 Stat. 285)	Prohibits the importation of wild animals or birds or parts thereof, taken, possessed, or exported in violation of the laws of the country or territory of origin. Provides enforcement and penalties for violation of wildlife related Acts or regulations.
Leases: Non-excess Property of Military Departments, 10 U.S.C. § 2667, as amended	Authorizes DoD to lease to commercial enterprises Federal land not currently needed for public use. Covers agricultural outleasing program.
Migratory Bird Treaty Act 16 U.S.C. § 703–712	The Act implements various treaties for the protection of migratory birds. Under the Act, taking, killing, or possessing migratory birds is unlawful without a valid permit.
National Environmental Policy Act of 1969 (NEPA), as amended; P.L. 91-190, 42 U.S.C. § 4321 et seq.	Requires Federal agencies to utilize a systematic approach when assessing environmental impacts of government activities. Establishes the use of environmental impact statements. NEPA proposes an interdisciplinary approach in a decision-making process designed to identify unacceptable or unnecessary impacts on the environment. The Council of Environmental Quality (CEQ) created Regulations for Implementing the National Environmental Policy Act [40 Code of

Federal Public Laws and Executive Orders	
	Federal Regulations (CFR) Parts 1500– 1508], which provide regulations applicable to and binding on all Federal agencies for implementing the procedural provisions of NEPA, as amended.
National Historic Preservation Act, 16 U.S.C. § 470 et seq.	Requires Federal agencies to take account of the effect of any federally assisted undertaking or licensing on any district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP). Provides for the nomination, identification (through listing on the NRHP), and protection of historical and cultural properties of significance.
National Trails Systems Act (16 U.S.C. § 1241–1249)	Provides for the establishment of recreation and scenic trails.
National Wildlife Refuge Acts	Provides for establishment of National Wildlife Refuges through purchase, land transfer, donation, cooperative agreements, and other means.
National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd–668ee)	Provides guidelines and instructions for the administration of Wildlife Refuges and other conservation areas.
Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001–13; 104 Stat. 3042), as amended	Established requirements for the treatment of Native American human remains and sacred or cultural objects found on Federal lands. Includes requirements on inventory, and notification.
Rivers and Harbors Act of 1899 (33 U.S.C. § 401 et seq.)	Makes it unlawful for the USAF to conduct any work or activity in navigable waters of the United States without a Federal Permit. Installations should coordinate with the U.S. Army Corps of Engineers (USACE) to obtain permits for the discharge of refuse affecting navigable waters under National Pollutant Discharge Elimination System (NPDES) and should coordinate with the USFWS to review effects on fish and wildlife of work and activities to be undertaken as permitted by the USACE.
Sale of certain interests in land, 10 U.S.C. § 2665	Authorizes sale of forest products and reimbursement of the costs of management of forest resources.
Soil and Water Conservation Act (16 U.S.C. § 2001, P.L. 95-193)	Installations shall coordinate with the Secretary of Agriculture to appraise, on a continual basis, soil/water-related resources. Installations will develop and update a program for furthering the conservation, protection, and enhancement of these resources consistent with other Federal and local programs.
Sikes Act (16 U.S.C. § 670a–670l, 74 Stat. 1052), as amended	Provides for the cooperation of DoD, the Departments of the Interior (USFWS), and the State Fish and Game Department in planning, developing, and maintaining fish and wildlife resources on a military installation. Requires development of an Integrated Natural Resources Management Plan and public access to natural resources, and allows collection of nominal hunting and fishing fees. NOTE: AFI 32-7064 sec 3.9. Staffing. As defined in DoDI 4715.03, use professionally trained natural resources management personnel with a degree in the natural sciences to develop and implement the installation INRMP. (T-0). 3.9.1. Outsourcing Natural Resources

Federal Public Laws and Executive Orders	
	Management. As stipulated in the Sikes Act, 16 U.S.C. § 670 et. seq., the Office of Management and Budget Circular No. A-76, Performance of Commercial Activities, August 4, 1983 (Revised May 29, 2003) does not apply to the development, implementation and enforcement of INRMPs. Activities that require the exercise of discretion in making decisions regarding the management and disposition of government owned natural resources are inherently governmental. When it is not practicable to utilize DoD personnel to perform inherently governmental natural resources management duties, obtain these services from federal agencies having responsibilities for the conservation and management of natural resources.
DoD Policy, Directives, and Instructions	
DoD Instruction 4150.07 DoD Pest Management Program dated 29 May 2008	Implements policy, assigns responsibilities, and prescribes procedures for the DoD Integrated Pest Management Program.
DoD Instruction 4715.1, Environmental Security	Establishes policy for protecting, preserving, and (when required) restoring and enhancing the quality of the environment. This instruction also ensures environmental factors are integrated into DoD decision-making processes that could impact the environment, and are given appropriate consideration along with other relevant factors.
DoD Instruction (DODI) 4715.03, Natural Resources Conservation Program	Implements policy, assigns responsibility, and prescribes procedures under DoDI 4715.1 for the integrated management of natural and cultural resources on property under DoD control.
OSD Policy Memorandum – 17 May 2005 – Implementation of Sikes Act Improvement Amendments: Supplemental Guidance Concerning Leased Lands	Provides supplemental guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD. The guidance covers lands occupied by tenants or lessees or being used by others pursuant to a permit, license, right of way, or any other form of permission. INRMPs must address the resource management on all lands for which the subject installation has real property accountability, including leased lands. Installation commanders may require tenants to accept responsibility for performing appropriate natural resource management actions as a condition of their occupancy or use, but this does not preclude the requirement to address the natural resource management needs of these lands in the installation INRMP.
OSD Policy Memorandum – 1 November 2004 – Implementation of Sikes Act Improvement Act Amendments: Supplemental Guidance Concerning INRMP Reviews	Emphasizes implementing and improving the overall INRMP coordination process. Provides policy on scope of INRMP review, and public comment on INRMP review.
OSD Policy Memorandum – 10 October 2002 – Implementation of Sikes Act Improvement Act: Updated Guidance	Provides guidance for implementing the requirements of the Sikes Act in a consistent manner throughout DoD and replaces the 21 September 1998 guidance Implementation of the Sikes Act Improvement Amendments. Emphasizes implementing and improving the overall INRMP coordination process and focuses on coordinating with stakeholders, reporting requirements and metrics, budgeting for

Federal Public Laws and Executive Orders	
	INRMP projects, using the INRMP as a substitute for critical habitat designation, supporting military training and testing needs, and facilitating the INRMP review process.
USAF Instructions and Directives	
32 CFR Part 989, as amended, and AFI 32-7061, Environmental Impact Analysis Process	Provides guidance and responsibilities in the EIAP for implementing INRMPs. Implementation of an INRMP constitutes a major federal action and therefore is subject to evaluation through an Environmental Assessment or an Environmental Impact Statement.
AFI 32-7062, Air Force Comprehensive Planning	Provides guidance and responsibilities related to the USAF comprehensive planning process on all USAF-controlled lands.
AFI 32-7064, Integrated Natural Resources Management	Implements AFPD 32-70, Environmental Quality; DODI 4715.03, Natural Resources Conservation Program; and DODI 7310.5, Accounting for Sale of Forest Products. It explains how to manage natural resources on USAF property in compliance with Federal, state, territorial, and local standards.
AFI 32-7065, Cultural Resources Management	This instruction implements AFPD 32-70 and DoDI 4710.1, Archaeological and Historic Resources Management. It explains how to manage cultural resources on USAF property in compliance with Federal, state, territorial, and local standards.
AFPD 32-70, Environmental Quality	Outlines the USAF mission to achieve and maintain environmental quality on all USAF lands by cleaning up environmental damage resulting from past activities, meeting all environmental standards applicable to present operations, planning its future activities to minimize environmental impacts, managing responsibly the irreplaceable natural and cultural resources it holds in public trust and eliminating pollution from its activities wherever possible. AFPD 32-70 also establishes policies to carry out these objectives.
Policy Memo for Implementation of Sikes Act Improvement Amendments, HQ USAF Environmental Office (USAF/ILEV) on January 29, 1999	Outlines the USAF interpretation and explanation of the Sikes Act and Improvement Act of 1997.

Appendix B. USACE Memo - No Jurisdictional Waters on Schriever AFB, 2018

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
SOUTHERN COLORADO REGULATORY OFFICE
200 S. SANTA FE AVENUE, SUITE 301
PUEBLO, COLORADO 81003

REPLY TO ATTENTION OF

January 24, 2018

Regulatory Division

SUBJECT: Approved Jurisdictional Determination – Action No. SPA-2013-00271-SCO, Schriever Air Force Base, El Paso County, Colorado- AJD request

Andrew Jensen
Schriever Air Force Base
50 CES/CEIE
500 O'Malley Avenue
Schriever AFB, Colorado 80912

Mr. Jensen,

This letter responds to your request for a jurisdictional determination (JD) for property located at latitude 38.8024 E, longitude -104.5161 N, in El Paso County, Colorado. We have assigned Action No. SPA-2013-00271-SCO to your request. Please reference this number in all future correspondence concerning the site.

Based on the information provided, we have determined that the Schriever AFB does not contain jurisdictional waters of the United States that are subject to regulation under Section 404 of the Clean Water Act. The attached JD form describes the area that was evaluated and determined to contain no waters of the United States. If you intend to conduct work that could result in a discharge of dredged or fill material into waters of the United States, please contact this office for a determination of Department of the Army permit requirements and refer to Action No. SPA-2013-00271-SCO.

The basis for this approved JD (attached) is that the project site contains waters with no significant nexus to any Traditional Navigable Waters or are considered isolated waters.

. A copy of this JD is also available at http://www.spa.usace.army.mil/reg/JD. This approved JD is valid for five years unless new information warrants revision of the determination before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the attached Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA). If you elect to appeal this approved JD, you must complete Section II of the form and return it to the Army Engineer Division, South

Pacific, CESPD-PDS-O, Attn: Tom Cavanaugh, Administrative Appeal Review Officer, 1455 Market Street, Room 1760, San Francisco, CA 94103-1399 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions, please contact me at (719) 543-6915 or by e-mail at Van.A.Truan@usace.army.mil. At your convenience, please complete a Customer Service Survey at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Sincerely,

TRUAN.VAN.ALLAN.1231422150

Van Truan
Chief, Southern Colorado
Regulatory Branch

Appendix C. Schriever AFB Plant Species, Urban Forest Tree Species, Wildlife Species

Scientific name	Common name
Abronia fragrans	fragrant sand-verbena
Achnatherum hymenoides	Indian ricegrass
Achnatherum robustum	sleepygrass
*Agropyron cristatum**	crested wheatgrass
Agrostis scabra	ticklegrass
Aliciella pinnatifida	sticky gilia
Allium textile	textile onion
*Amaranthus albus**	tumble pigweed
Amaranthus retroflexus	redroot amaranth
Ambrosia linearis	streaked burr ragweed
Ambrosia psilostachya	western ragweed
Ambrosia tomentosa	skeleton-leaf bursage
Andropogon gerardii	big bluestem
Antennaria parvifolia	small-leaf pussytoes
Argemone polyanthemos	crested prickly-poppy
Aristida divaricata	poverty three-awn
Aristida purpurea	purple three-awn
Artemisia frigida	fringed sagebrush
Artemisia ludoviciana	Louisiana sagewort
Asclepias speciosa	showy milkweed
Astragalus agrestis	purple milkvetch
Astragalus ceramicus	painted milkvetch
Astragalus drummondii	Drummond's milkvetch
Astragalus gracilis	slender milkvetch
*Bassia scoparia**	kochia/burning bush
*Bothriochloa ischaemum**	yellow bluestem
Bouteloua curtipendula	sideoats grama
Bouteloua dactyloides	buffalograss
Bouteloua gracilis	blue grama
Bouteloua hirsuta var. *hirsuta*	hairy grama
Bouteloua simplex	matted grama
Brickellia eupatorioides	false boneset
*Bromus inermis**	smooth brome
*Bromus tectorum**	cheatgrass
Calamovilfa longifolia	prairie sandreed
*Cardaria chalepensis**	lenspod whitetop
*Cardaria draba**	whitetop/hoary cress
*Carduus nutans**	musk thistle
Carex duriuscula	needleleaf sedge
Carex praegracilis	clustered field sedge

Scientific name	Common name
Castilleja integra	wholeleaf Indian paintbrush
*Centaurea diffusa**	diffuse knapweed
Chamaesyce glyptosperma	ribseed sandmat
Chenopodium album	lambsquarters
Chenopodium desiccatum	aridland goosefoot
Chenopodium leptophyllum	narrowleaf goosefoot
Chenopodium pratericola	desert goosefoot
*Cirsium arvense**	Canada thistle
Cirsium canescens	prairie thistle
Cirsium ochrocentrum	yellowspine thistle
Cirsium undulatum	wavyleaf thistle
*Cirsium vulgare**	bull thistle
Comandra umbellata ssp. *pallida*	pale bastard toadflax
*Convolvulus arvensis**	field bindweed
Conyza canadensis	horseweed
Coreopsis tinctoria	plains coreopsis
Cryptantha cineria var. *jamesii*	James' cryptantha
Cryptantha fendleri	sand-dune cryptantha
Cyclachaena xanthifolia	giant sumpweed
Cycloloma atriplicifolium	winged pigweed
Cylindropuntia imbricata	tree cholla
Cyperus fendlerianus	Fendler's flatsedge
Distichlis stricta	saltgrass
Dyssodia papposa	fetid marigold
Echinocereus viridiflorus	nylon hedgehog cactus
*Elaeagnus angustifolia**	Russian olive
Eleocharis acicularis	needle spikerush
Eleocharis palustris	common spikerush
Elymus canadensis	Canada wildrye
Elymus elymoides	squirreltail
Elymus lanceolatus	thickspike wheatgrass
*Eragrostis barrelieri**	Mediterranean lovegrass
Erigeron colomexicanus	running daisy
Erigeron divergens	spreading daisy
Erigeron flagellaris	trailing daisy
Erigeron pumilus	shaggy daisy
Eriogonum annuum	annual wild buckwheat
Eriogonum effusum	spreading buckwheat
*Erodium cicutarium**	redstem filaree
Erysimum asperum	western wallflower
Erysimum capitatum	sand dune wallflower
Evolvulus nuttallianus	shaggy dwarf morning-glory
Grindelia squarrosa	curlycup gumweed

Scientific name	Common name
Gutierrezia sarothrae	broom snakeweed
Helianthus annuus	common sunflower
Helianthus petiolaris	prairie sunflower
Hesperostipa comata	needle and thread
Heterotheca villosa	hairy false goldenaster
Hordeum jubatum	foxtail barley
Hymenopappus filifolius	fineleaf hymenopappus
Hymenopappus tenuifolius	Chalk Hill hymenopappus
Koeleria macrantha	junegrass
*Lactuca serriola**	prickly lettuce
Lappula occidentalis	western stickseed
Lepidium densiflorum	common pepperweed
Lesquerella montana	mountain bladderpod
Liatris punctata	dotted blazing star
Lupinus plattensis	Nebraska lupine
Lycurus setosus	bristly wolfstail
Lygodesmia juncea	rush skeletonweed
Machaeranthera canescens	hoary tansy-aster
Machaeranthera pinnatifida	spiny goldenweed
*Malva neglecta**	common mallow
*Melilotus officinalis**	yellow sweet clover
Mentzelia nuda	white-flowered blazingstar
Mirabilis linearis	narrowleaf four o'clock
Muhlenbergia richardsonis	mat muhly
Muhlenbergia torreyi	ring muhly
Munroa squarrosa	false buffalograss
Oenothera albicaulis	whitest evening primrose
Oenothera cespitosa	tufted evening primrose
Oenothera coronopifolia	crownleaf evening primrose
Oenothera curtifolia	velvetweed
Oenothera latifolia	pale evening primrose
Oenothera suffrutescens	scarlet beeblossom/gaura
Oenothera villosa	hairy evening primrose
Opuntia macrorhiza	western prickly pear
Opuntia polyacantha	plains prickly pear
Oxytropis lambertii	purple locoweed
Oxytropis sericea var. *sericea*	white locoweed
Packera fendleri	Fendler's ragwort
Packera plattensis	prairie groundsel
Packera tridenticulata	threetooth ragwort
Panicum virgatum	switchgrass
Pascopyrum smithii	western wheatgrass
Penstemon albidus	white penstemon

Scientific name	Common name
Physalis hederifolia var. *comata*	ivy-leaf ground cherry
Picradeniopsis woodhousei	Woodhouse's bahia
Pinus ponderosa var. *scopulorum*	ponderosa pine
Plantago patagonica	woolly plantain
*Polygonum argyrocoleon**	silversheath knotweed
*Polygonum aviculare**	prostrate knotweed
Polygonum convolvulus var. *convolvulus**	black bindweed
*Polypogon monspeliensis**	annual rabbitsfoot grass
Populus deltoides ssp. *monilifera*	plains cottonwood
Portulaca oleracea	common purslane
Potentilla paradoxa	bush cinquefoil
Potentilla pensylvanica	Pennsylvania cinquefoil
*Psathyrostachys juncea**	Russian wildrye
Psoralidium tenuiflorum	slimflower scurfpea
Quincula lobata	Chinese lantern
Ratibida columnifera	prairie coneflower
Ratibida tagetes	short-ray prairie coneflower
Ribes aureum	golden currant
Rosa woodsii	smooth rose
*Rumex crispus**	curly dock
Salix exigua	coyote willow/sandbar willow
*Salsola tragus**	Russian thistle/tumbleweed
Schedonnardus paniculatus	tumblegrass
Schizachyrium scoparium var. *scoparium*	little bluestem
Senecio spartioides	narrow-leaved butterweed
*Sisymbrium altissimum**	tall tumblemustard
Solanum triflorum	cutleaf nightshade
Sorghastrum nutans	Indian grass
Spartina pectinata	prairie cordgrass
Sphaeralcea coccinea	scarlet globemallow
Sporobolus cryptandrus	sand dropseed
Stephanomeria pauciflora	brownplume wire lettuce
Symphyotrichum falcatum	white prairie aster
*Tamarix chinensis**	salt-cedar
*Taraxacum officinale**	common dandelion
Thelesperma filifolium var. *intermedium*	stiff greenthread
Thelesperma megapotamicum	Hopi tea greenthread
*Thinopyrum intermedium**	intermediate wheatgrass
*Thlaspi arvense**	field pennycress
Tradescantia occidentalis	prairie spiderwort
*Tragopogon dubius**	western salsify
*Tribulus terrestris**	puncture vine
*Verbascum thapsus**	common mullein

Scientific name	Common name
Verbena bracteata	prostrate vervain
Verbesina encelioides	golden crownbeard
Veronica peregrina ssp. *xalapensis*	purslane speedwell
Vulpia octoflora	sixweeks fescue
Xanthium strumarium	common cocklebur
Yucca glauca	Great Plains yucca
Zinnia grandiflora	Rocky Mountain zinnia

Non-native species marked with asterisk *
Nomenclature and non-native status follows USDA PLANTS (2018)

Urban Forest Tree Species

Common Name	Scientific Name
Ponderosa pine	*Pinus ponderosa*
Green ash	*Fraxinus pennsylvanica*
Colorado blue spruce	*Picea pungens glauca*
Siberian elm	*Ulmus pumila*
Thornless honey locust	*Gleditsia triacanthos inermis*
Ornamental crabapple	*Malus (Pyrus)* var.
Pinyon pine	*Pinus edulis*
Russian olive	*Elaeagnus angustifolia*
Austrian pine	*Pinus nigra*
Sargent cherry	*Prunus sargentii*
Hackberry	*Celtis occidentalis*
Ornamental juniper	*Juniperus variety*
Littleleaf linden	*Tilia cordata*
Red maple	*Acer rubrum*
Ornamental hawthorn	*Crataegus* var.
Ornamental sumac	*Rhus* var.
Quaking aspen	*Populus tremuloides*
Scrub live oak	*Quercus turbinella*
Bristlecone pine	*Pinus aristata*
Purple-leaf plum	*Prunus cerasifera*
Ornamental cherry	*Prunus* var.
Black gum	*Nyssa sylvatica*
Narrowleaved cottonwood	*Populus angustifolia*
Oak species	*Quercus* spp.
White fir	*Abies concolor*
Paper birch	*Betula papyrifera*
Alder species	*Alnus* spp.
Eastern cottonwood	*Populus deltoides*
Ornamental viburnum	*Viburnum* var.
Rocky Mountain Juniper	*Juniperus scopulorum*
European mountain-ash	*Sorbus aucuparia*
Ornamental lilac	*Syringa* var.
Cockspur hawthorn	*Crataegus crus-galli*
Goldenrain-tree	*Koelreuteria paniculata*
Ornamental arbovitae	*Thuja* var.
Amur maple	*Acer ginnala*
Yucca species	*Yucca* spp.
Norway maple	*Acer platanoides*
White poplar	*Populus alba*
Cherry/plum species	*Prunus* spp.

Tree-of-heaven	*Ailanthus altissima*
Autumn-olive	*Elaeagnus umbellata*
Willow species	*Salix* spp.

Birds, Insects, Mammals, and Reptiles found at Schriever Air Force Base

Common Name	Scientific Name
Birds	
American crow	*Corvus brachyrhynchos*
American kestrel	*Falco sparverius*
American robin	*Turdus migratorius*
Bald eagle	*Haliaeetus leucocephalus*
Bank swallow	*Riparia riparia*
Barn swallow	*Hirundo rustica*
Brewer's blackbird	*Euphagus cyanocephalus*
Brewer's sparrow	*Spizella breweri*
Brown-headed cowbird	*Molothrus ater*
Burrowing owl	*Athene cunicularia*
Cassin's kingbird	*Tyrannus vociferans*
Cassin's sparrow	*Peucaea cassinii*
Chipping sparrow	*Spizella passerinia*
Clay-colored sparrow	*Spizella pallida*
Cliff swallow	*Petrochelidon pyrrhonota*
Common nighthawk	*Chordeiles minor*
Cooper's hawk	*Accipiter cooperii*
Eurasian collared-dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
Grasshopper sparrow	*Ammodramus savannarum*
Great horned owl	*Bubo virginianus*
Horned lark	*Eremophila alpestris*
House finch	*Haemorhous mexicanus*
House sparrow	*Passer domesticus*
Killdeer	*Charadrius vociferus*
Lark bunting	*Calamospiza melanocorys*
Lark sparrow	*Chondestes grammacus*
Loggerhead shrike	*Lanius ludovicianus*
Long-billed Curlew	*Numenius americanus*
Mountain plover	*Charadrius montanus*
Mourning dove	*Zenaida macroura*
Northern harrier	*Circus cyaneus*
Northern mockingbird	*Mimus polyglottos*

Common Name	Scientific Name
Prairie falcon	*Falco mexicanus*
Red-tailed hawk	*Buteo jamaicensis*
Rough-legged hawk	*Buteo lagopus*
Rock pigeon	*Columba livia*
Savannah sparrow	*Passerculus sandwichensis*
Say's phoebe	*Sayornis saya*
Scaled quail	*Callipepla squamata*
Swainson's hawk	*Buteo swainsoni*
Turkey vulture	*Cathartes aura*
Vesper sparrow	*Pooecetes gramineus*
Western kingbird	*Tyrannus verticalis*
Western meadowlark	*Sturnella neglecta*
Wilson’s phalarope	*Phalaropus tricolor*
Yellow-rumped warbler	*Setophaga coronata*
Insects	
Acmon blue	*Plebejus acmon*
Aphrodite fritillary	*Speyeria aphrodite*
American bumble bee	*Bombus pennsylvanicus*
Antlion	*Brachynemurus hubbardii*
Checkered white	*Pontia protodice*
Clouded sulphur	*Colias philodice*
Common sootywing	*Pholisora Catullus*
Dainty sulphur	*Nathalis iole*
Monarch	*Danaus plexippus*
Painted crescent	*Phyciodes picta*
Riding’s satyr	*Neominois ridingsii*
Two-tailed swallowtail	*Papilio rutulus*
Variegated fritillary	*Euptoieta claudia*
Western harvester ant	*Pogonomyrmex occidentalis*
Reptiles	
Lesser earless lizard	*Holbrookia maculata*
Bullsnake/Gophersnake	*Pituophis catenifer*
Prairie rattlesnake	*Crotalus viridis*
Mammals	
Black-tailed jackrabbit	*Lepus californicus*
Black-tailed prairie dog	*Cynomys ludovicianus*
Coyote	*Canis latrans*
Deer mouse	*Peromyscus maniculatus*
Desert cottontail	*Sylvilagus audubonii*

Common Name	Scientific Name
Long-tailed weasel	*Mustela frenata*
Meadow vole	*Microtus pennsylvanicus*
Northern pocket gopher	*Thomomys talpoides*
Northern raccoon	*Procyon lotor*
Ord's kangaroo rat	*Dipodomys ordii*
Pocket gopher	*Thomomys* spp.
Pronghorn	*Antilocapra americana*
Swift fox	*Vulpes velox*
Thirteen-lined ground squirrel	*Ictidomys tridecemlineatus*
Western harvest mouse	*Reithrodontomys megalotis*

Appendix D. Schriever Air Force Base Natural Resource Reports and Plans

2000

Natural Heritage Inventory of Schriever Air Force Base, El Paso County, Colorado
K. Fayette, D. Anderson, E. Mohr, and J. Gionfriddo
Colorado Natural Heritage Program, Colorado State University, Fort Collins, CO

2001

Schriever Playas. Pp. 83-87 in *Survey of Critical Wetlands and Riparian Areas in El Paso and Pueblo Counties, Colorado*
G. Doyle, J. Gionfriddo, D. Anderson, and D. Culver
Colorado Natural Heritage Program, Colorado State University, Fort Collins, CO

2005

Invasive Plant Species Control Plan, Schriever Air Force Base, Colorado
North Wind, Inc., Idaho Falls, ID

Management of Black-tailed Prairie Dogs on Schriever Air Force Base, Colorado
P. J. Young
Prairie Ecosystems Research Group, Farmersburg, IA

2008

Integrated Natural Resources Management Plan for Schriever Air Force Base, Colorado
HydroGeoLogic, Inc., Herndon, VA

2012

Invasive Plant Species Control Plan, Schriever Air Force Base, Colorado
North Wind, Idaho Falls, ID

Natural Resources Habitat Management Plan, Schriever Air Force Base, Colorado
North Wind, Idaho Falls, ID

2015

Schriever Air Force Base Integrated Natural Resources Management Plan, May 2015
Civil Engineering Division, Schriever Air Force Base, Colorado Springs, CO

2016

Prairie Dog Colony and Burrowing Owl Nest Site Survey Report, Schriever Air Force Base, 2015
K. M. Canestorp
U.S. Fish and Wildlife Service, Colorado Fish and Wildlife Conservation Office, Lakewood, CO

Prairie Dog Colony and Burrowing Owl Nest Site Survey Report, Schriever Air Force Base, 2016
K. M. Canestorp
U.S. Fish and Wildlife Service, Colorado Fish and Wildlife Conservation Office, Lakewood, CO

2017

Noxious Weed Survey and Integrated Noxious Weed Management Plan: Schriever Air Force Base, El Paso County, CO
P. Smith, A. Greenwell, and K. Schulz
Colorado Natural Heritage Program, Colorado State University, Fort Collins, CO

2018

Prairie Dog Colony and Burrowing Owl Nest Site Survey Report, Schriever Air Force Base, 2017
K. M. Canestorp
U.S. Fish and Wildlife Service, Colorado Fish and Wildlife Conservation Office, Lakewood, CO

Prairie Dog Colony and Burrowing Owl Nest Site Survey Report, Schriever Air Force Base, 2018
K. M. Canestorp
U.S. Fish and Wildlife Service, Colorado Fish and Wildlife Conservation Office, Lakewood, CO

15.0 ASSOCIATED PLANS

Tab 1 – Wildland Fire Management Plan

Available through 50 CES Environmental Office

Tab 2 – Bird/Wildlife Aircraft Strike Hazard (BASH)

Not Applicable to Schriever AFB

Tab 3 – Golf Environmental Management (GEM) Plan

Not Applicable to Schriever AFB

Tab 4 – Integrated Cultural Resources Management Plan (ICRMP)

Available through 50 CES/CEIE Environmental Office

Tab 5 – Integrated Pest Management Plan (IPMP)

Available through 21 CES Pest Management Office