

**Camp Navajo**  
**Integrated Natural Resources Management Plan**  
**Bellemont, Arizona**



Arizona Army National Guard  
Department of Emergency and Military Affairs  
Environmental Office  
5636 East McDowell Road  
Phoenix, Arizona 85008

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**CAMP NAVAJO**  
**INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN**  
**BELLEMONT, ARIZONA**

The Integrated Natural Resources Management Plan meets the requirements of the Sikes Act (16 United States Code §670(a) *et seq.*, as amended). This plan has set appropriate and adequate guidelines for conserving and protecting the natural resources of Camp Navajo.

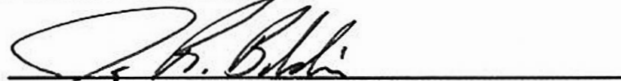
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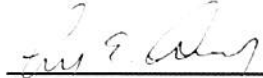
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**LIST OF ACRONYMS AND ABBREVIATIONS**

ACUB	Army Compatible Use Buffer	CWA	Clean Water Act
ADEQ	Arizona Department of Environmental Quality	DA	Department of Army
AGFD	Arizona Game and Fish Department	DESCOM	Army Depot System Command
AMSL	Above mean sea level	DoD	Department of Defense
ANPL	Arizona Native Plant Law	EA	Environmental Assessment
APE	Area of Potential Effect	EMO	Environmental Management Office
AR	Army Regulation	EMU	Ecological Management Unit
ARNG-I&E	Army National Guard's Installation and Environment Directorate	EO	Executive Order
ARNG-TRS	Army National Guard's director of operations, training, and readiness	EOD	Explosive Ordnance Disposal
ASLD	Arizona State Land Department	EPA	Environmental Protection Agency
ASA	Ammunition Storage Area	EPM	Environmental Program Manager
ASM	Arizona State Museum	ESA	Endangered Species Act
AZDEMA	Arizona Department of Emergency and Military Affairs	F	Fahrenheit
AZARNG	Arizona Army National Guard	FMO	Facilities Management Office
BGEPA	Bald and Golden Eagle Protection Act	HS	Highly Safeguarded
bgs	Below ground surface	I-40	Interstate 40
BMP	Best management practice	INRMP	Integrated Natural Resources Management Plan
BNSF	Burlington-Northern and Santa Fe	IPA	Intergovernmental Personnel Act of 1972
BO	Biological Opinion	IPMP	Integrated Pest Management Plan
BRAC	Base Realignment and Closure	ITAM	Integrated Training Area Management
CFMO	Construction and Facilities Management Office	IWFMP	Integrated Wildland Fire Management Plan
CFR	Code of Federal Regulations	LT	Listed Threatened
		M16	5.56-millimeter Semiautomatic Rifle

M203	40-millimeter Grenade Launcher on M16
MBTA	Migratory Bird Treaty Act
MEC	Munitions and explosives of concern
MOU	Memorandum of Understanding
MP	Military Police
MSO	Mexican Spotted Owl
N/A	Not Available
NADA	Navajo Army Depot Activity
NAGPRA	Native American Graves Protection and Repatriation Act
NAU	Northern Arizona University
NBA	New Breeding Area
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NHPA	National Historic Preservation Act
NOD	Navajo Ordnance Depot
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRM	Natural resources manager
OB/OD	Open Burn/Open Detonation
OHV	Off-highway vehicle
OOD	Ordnance Operations Department
PAC	Protected Activity Center

PCPA	Post-Closure Permit Area
PFA	Post-Fledging Family Area
PIF	Partners in Flight
PM <sub>2.5</sub>	Particulate Matter less than 2.5 microns in diameter
POTO	Plans, operations, and training officer
RCMP	Range Complex Master Plan
RTLA	Range and Training Land Assessment
SAIA	Sikes Act Improvement Amendments
SC	Species of Concern
SDWA	Safe Drinking Water Act
SGCN	Species of greatest conservation need
SHPO	State Historic Preservation Office
SPCCP	Spill Prevention Control and Countermeasure Plan
SR	Salvage Restricted
SRP	Sustainable Range Program
SRSF	Survey Report Summary Form
STEP	Status Tool for the Environmental Program
SWBEMC	Southwestern Bald Eagle Management Committee
SWMU MRWA	Solid Waste Management Unit Munitions Response Work Area
TAG	The adjutant general
UGM	Upper Gila Management Zone
USACE	United States Army Corps of Engineers

USC	United States Code
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UXO	Unexploded ordnance
WOTUS	Waters of the United States

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## SECTION 1 EXECUTIVE SUMMARY

### 1.1 PURPOSE AND SCOPE

The mission of Arizona Garrison Training Center is to command, operate, manage, and administer the use of resources of the Level III Training Center to accomplish assigned missions. This mission includes providing year-round service through administrative, engineering, logistical, training, and operational support to assigned, attached, or transient (support component) units and joint forces for multiple battalions. Their vision is to maximize the capability, availability, and accessibility to Ranges and Training Lands to support doctrinal requirements, mobilization, and deployments under normal and surge conditions. The Camp Navajo Training Site (Camp Navajo) mission statement is “to operate a training site and storage facility at Bellemont, Arizona.” To achieve this mission, Camp Navajo focuses on three essential areas:

- 1) The operation of a National Guard training site for troops and units, including transportation, engineering, Military Police (MP), aviation, ordnance, medical quartermaster, and related units.
- 2) The provision of depot-level storage services to sustain and maintain the military readiness of various Department of Defense (DoD) agencies and civilian customers.
- 3) The provision of command and control for the Arizona Army National Guard (AZARNG) force structure in Arizona.

The AZARNG is committed to providing sound environmental stewardship, providing continuous improvement and compliance to regulatory and other requirements, conserving its natural resources, preventing pollution or contamination, gaining the support of the communities in which its staff work and live, and incorporating professionalism and environmental planning into all that they do.

Camp Navajo is located in north-central Arizona, 12 miles west of Flagstaff, 17 miles east of Williams, and adjacent to the small community of Bellemont located along Interstate 40 (I-40). A large portion of the land surrounding Camp Navajo is undeveloped and managed by the United States Forest Service (USFS) and Arizona State Land Department (ASLD) (the Kaibab and Coconino national forests land being the predominant land managers). Camp Navajo provides a variety of environmental conditions and ecosystems in which to train Soldiers. This training objective must be met in a way that provides for sustainable, healthy ecosystems; complies with applicable environmental laws and regulations; and ensures no net loss in the capability of military installation lands to support the military mission. Integrated Natural Resources Management Plans (INRMPs) help installation commanders manage natural resources more effectively, ensuring that installation lands remain available and in good condition to continually support the military mission. The purpose of this INRMP is to outline the AZARNG plan to maximize training opportunities available at Camp Navajo while managing and preserving the natural resources on the installation by complying with environmental laws and regulations, primarily those related to threatened and endangered species.

Natural resource management within the installation includes specific objectives detailed in the Sikes Act Improvement Amendments of 1997 (SAIA) (16 United States Code [USC] § 670[a] *et. seq.*) and management programs that ensure conservation and restoration of natural resources and compliance with applicable regulations. SAIA established the federal requirement for creating INRMPs. The scope of this document is the integration and coordination of all external and internal activities at Camp Navajo

that affect or may affect natural resources. In the event that significant changes in proposed activities occur or new activities are planned, the INRMP will be updated to reflect these actions and their effects on the environment. The current INRMP (2019) will be reviewed under the standards set by the DoD Instruction 4715.03 Natural Resources Conservation Program. Using principles of ecosystem management, Camp Navajo has developed partnerships with various federal and state agencies to support management of its natural resources. AZARNG will continue to consult with these agencies regarding current and future actions that may affect natural and wildlife resources at Camp Navajo.

Major partners in implementing this plan are the United States Fish and Wildlife Service (USFWS) and Arizona Game and Fish Department (AGFD). The USFWS and AGFD are required to cooperate in preparation of the INRMP under the Sikes Act, amended under the SAIA. Other partners include DoD agencies, federal and state agencies, universities, contractors, and private citizens. An interdisciplinary approach to collect information about the management of natural resources at Camp Navajo has and will continue to be gathered from the AZARNG Environmental Management Office (EMO) through partnerships with the various collaborators mentioned above. In addition, the public was provided an opportunity to comment on the INRMP during a 30-day public comment period. A distribution list for the INRMP as well as agency and Tribal coordination and response letters are included in **Appendix C**, as well as in the Administrative Record, which is available at the EMO at Camp Navajo.

## **1.2 BENEFITS**

Implementation of the INRMP will improve the quality of training land and enhance mission readiness by providing more opportunities for training. The INRMP will also improve the military's ability for long-range planning at Camp Navajo. Such planning may decrease long-term environmental costs and reduce personal and installation liabilities from environmental noncompliance of environmental regulation. Implementation of this INRMP will benefit the installation and the surrounding community by improving forest resiliency and increasing environmental awareness.

The INRMP provides the basis for ecosystem management and the protection of natural resources, including biodiversity within the installation. Implementation of this plan will increase overall knowledge of Camp Navajo's natural resources through surveys, research, and outreach programs.

## **1.3 PRIMARY NATURAL RESOURCE MANAGEMENT GOALS**

The primary purpose of Camp Navajo is to support the military missions of the AZARNG. The design of the INRMP supports and accommodates accomplishment of military missions while providing for scientifically sound natural resources stewardship. Specific installation management goals identified by the INRMP (Section 8) are as follows:

- Manage forests to sustain military readiness and improve the diversity of conditions available for units and Soldier training;
- Minimize disruptions in Soldier training by protecting training lands from large-scale disturbances (such as catastrophic wildfires and bark beetle infestation);
- Restore forest resiliency, function, and historic forest structure, pattern, and composition. Resiliency increases the ability of the forest to survive natural disturbances, such as insects, disease, fire, and climate change;

- Restore resiliency and function to grassland and meadows, which provide important training conditions and habitat for many wildlife species. Maintain, monitor, restore, and manage water resources for plants and wildlife;
- Restore fire to its natural role in the ecosystem to sustain and/or enhance military training lands;
- Protect and sustain native plant communities;
- Protect vegetation communities from non-native, invasive species;
- Manage for Mexican spotted owl (MSO) (*Strix occidentalis lucida*) and bald eagle (*Haliaeetus leucocephalus*). Monitor and study other raptor species and migratory birds;
- Manage habitat for small mammals, herpetofauna, invertebrates, and game animals;
- Implement the Integrated Pest Management Plan (IPMP) (**Appendix M**);
- Maintain or enhance soil productivity;
- Protect soils to prevent erosion;
- Enforce wildlife and natural resource laws to best manage, maintain, and protect resources;
- Inform troops and the public about natural resources stewardship efforts.

These goals are supported in the INRMP by objectives and projects which provide management strategies and specific actions to achieve these goals. A detailed discussion of goals and objectives can be found in Section 8 of this INRMP and in **Appendix G**. These goals will ensure the success of the military mission and the conservation of natural resources. The general philosophies and methodologies used throughout the Camp Navajo Natural Resources Management Program focus on conducting required military training while maintaining ecosystem viability.

#### 1.4 IMPLEMENTATION AND EFFECTIVENESS

This INRMP provides a description of the installation (e.g., location, history, and mission), information regarding the on-site and adjacent physical and biotic environment, and an assessment of the anticipated impacts of mission activities on natural resources. The INRMP includes recommendations for various management practices designed to enhance the natural resource base and proactively mitigate anticipated negative impacts that may result from the successful execution of the military mission at Camp Navajo.

Existing cultural resources at Camp Navajo are referenced within the context of established management protocols to ensure the compatibility of this document. Additionally, this INRMP presents methods that will increase the environmental awareness of AZARNG personnel, guest units using Camp Navajo for training, and the general public. The implementation of this INRMP at Camp Navajo will ensure the continued success and accomplishment of Camp Navajo's military mission while providing for multiple uses of natural resources and promoting adaptive stewardship practices that sustain ecosystem and biological integrity.

This document complies with applicable Army and DoD policies as well as applicable federal, state, and local mandates. AZARNG will actively cooperate with federal, state, and local organizations to carry out national land use and conservation policies to the extent practicable and in concert with the assigned mission.

The EMO will coordinate the implementation of the INRMP and compliance with regulations throughout the installation. An annual review will be conducted each fiscal year by AZARNG in cooperation with USFWS and AGFD to report the progress and effectiveness of the INRMP. The INRMP is a “living” document that will be continually refined as management actions are implemented, as goals and objectives are met, and to address changes in mission and training requirements at Camp Navajo.



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## SECTION 2 OVERVIEW GENERAL INFORMATION, COMPLIANCE, INTEGRATION, AND RESPONSIBILITIES

### 2.1 PURPOSE

This INRMP is a revision of the 2002 to 2006 INRMP for Camp Navajo. The INRMP is used by the National Guard Bureau (NGB) and the AZARNG as the primary tool for managing natural resources at Camp Navajo. The reasons for the INRMP revision include 1) incorporating integrated wildland fire management, 2) incorporating forest treatments, and 3) collecting updated resource information.

Updates to this INRMP were delayed many times throughout the years. During updates in 2012, Camp Navajo's proposed forest treatments were incorporated into a Maneuver Training Center Lite Environmental Assessment (EA) for range construction instead of the Camp Navajo INRMP EA, causing delays in the process. Also in 2012, breeding MSO were detected on Camp Navajo, necessitating an amendment to the Biological Opinion (BO) and prior EA, which further delayed proceedings. When reviewed in September 2015, the NGB suggested the forest treatments be removed from the prior EA and analyzed under the current INRMP EA (**Appendix B**). This INRMP contains the revisions necessary and describes the current ways in which Camp Navajo manages its resources.

The purpose of the INRMP is to develop a plan that integrates natural resources management with the military mission. Camp Navajo must provide a variety of environmental conditions and ecosystems in which to train Soldiers. This objective must be met in a way that provides for sustainable, healthy ecosystems; complies with all applicable environmental laws and regulations; and provides for no net loss in the capability of military installation lands to support the military mission on the installation. An INRMP helps installation commanders manage natural resources more effectively to ensure installation lands remain available and in good condition to support the military mission. It also must be prepared in cooperation and mutual agreement with the USFWS and AGFD. This INRMP provides a comprehensive approach to ecosystem management on Camp Navajo.

The purpose of Camp Navajo's INRMP is to:

- Support training by fulfilling a variety of natural resources management needs on Camp Navajo;
- Describe Camp Navajo's natural resources and incorporate natural resources management plans into one cohesive document;
- Integrate land use carrying capacities with ecosystem management to conserve and preserve natural and cultural resources so they will be available for use by present and future generations;
- Ensure compliance with applicable federal and state laws, acts, and regulations, including the SAIA and the Endangered Species Act (ESA);
- Establish lines of communication between agencies to facilitate ecosystem management;
- Identify species, areas, and ecosystems that are unique, sensitive to disturbance, or in need of special consideration and then provide a plan for protection of these species, areas, and ecosystems;
- Identify natural resources information needs and provide methods to fulfill them (e.g., surveys and studies);

- Achieve no net loss in the capability of military installation lands to support the military mission; and
- Facilitate the National Environmental Policy Act (NEPA) process.

The AZARNG recognizes that its ongoing and proposed training activities can potentially use or consume the natural resources on mission land and that successful execution of their mission is dependent upon sustainable use of these lands. The AZARNG recognizes its responsibility to guarantee continued access to its land, air, and water resources for realistic military training while ensuring that the natural and cultural resources are sustained in a healthy condition for scientific research, education, and other compatible uses by future generations.

This document will become part of the installation's master plan. The INRMP will be reviewed annually and updated as needed. This INRMP will ensure that natural resource conservation and installation mission activities are integrated and consistent with federal mandates for land stewardship.

## **2.2 AUTHORITY**

### **2.2.1 Arizona Army National Guard**

#### 2.2.1.1 The Adjutant General

The adjutant general (TAG) is the director of the Arizona Department of Emergency and Military Affairs (AZDEMA) and is responsible for the Arizona National Guard (Air, Army, Joint Task Force), the Division of Emergency Management, and the Division of Administrative Services. The TAG is a signatory on the INRMP, authorizes its adoption and implementation, and has liability for environmental compliance.

#### 2.2.1.2 Construction and Facilities Management Office

The Construction and Facilities Management Office (CFMO) oversees the EMO and provides functional leadership for all AZARNG facility engineering programs, including facility construction, maintenance, fire/emergency service, and real estate, with an emphasis on safeguarding the environment and providing sustainable training areas and work environments.

#### 2.2.1.3 Environmental Management Office

Nested within the Facilities Management Office (FMO), the EMO is responsible for the environmental management of AZARNG lands. It ensures Camp Navajo complies with state and federal environmental laws and regulations. The EMO is the primary organization within AZARNG responsible for the implementation of the INRMP. Outlined below are the supporting positions responsible for the implementation and oversight of the INRMP.

#### 2.2.1.4 Training Site Command

The Training Site Command is responsible for ensuring that the facilities and training areas are maintained to support the military mission of Camp Navajo. Responsibilities include the readiness and availability of lands on which to conduct training and working with the Environmental Program manager (EPM) to ensure compliance with regulations. The training site commander is directly responsible for operating and maintaining Camp Navajo, including the implementation and the enforcement of the INRMP.

#### 2.2.1.5 Environmental Program Manager

The EPM oversees the implementation of the INRMP and the compliance of regulations throughout the AZARNG. The EPM supervises the Conservation and Compliance Program managers.

#### 2.2.1.6 Conservation Programs Manager

The Conservation Program manager is responsible for the natural resources programs throughout the AZARNG. The manager directly supervises the Natural Resources Program managers and integrated pest management coordinator and works with the EPM to ensure compliance with federal and state laws pertaining to natural resources.

#### 2.2.1.7 Natural Resources Manager

The natural resources manager (NRM) coordinates efforts to protect, enhance, and use the natural resources found on Camp Navajo under the direct supervision of the Conservation Program manager. The manager serves as the liaison between the AZARNG and other natural and cultural resources agencies such as AGFD, USFWS, ASLD, USFS, and others. Responsibilities include assuring that natural resources on the installation remain capable of supporting the training mission, working with the EPM and training site commander in setting installation-specific hunting requirements, coordinating wildlife and vegetative surveys, forest management and restoration activities, assisting the EMO with NEPA and Section 7 ESA compliance, and other natural resource responsibilities.

#### 2.2.1.8 Cultural Resources Manager

The cultural resource manager coordinates all efforts to protect, enhance, and use the cultural resource found on Camp Navajo under the direct supervision of the EPM. This person is the liaison between the AZARNG and cultural resource agencies such as the State Historic Preservation Office (SHPO). Responsibilities include assuring the cultural resources on the installation are capable of supporting the training mission, working with the EPM and garrison commander, coordinating cultural resources surveys, assisting the AZARNG with NEPA and Section 106 compliance, and other cultural resources responsibilities.

#### 2.2.1.9 Integrated Pest Management Coordinator

The integrated pest management coordinator provides oversight for all activities that involve pest management by and for the AZARNG and ensures pest management activities, including but not limited to contracts and facility operations, are consistent with the IPMP. The IPMP is a tool to manage pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.

#### 2.2.1.10 Plans, Operations, and Training Officer

The plans, operations, and training officer (POTO) is responsible for maintaining training facilities and scheduling training on Camp Navajo. The POTO establishes training methods to fulfill military mission requirements while complying with environmental policies. The POTO plays an integral part in the review process for the completion of this INRMP.

## **2.2.2 National Guard Bureau**

The NGB is the higher headquarters for the AZARNG. Two directorates are involved in the management of natural resources: The Army National Guard's Installation and Environment Directorate (ARNG-I&E) and the director of operations, training, and readiness (ARNG-TRS). ARNG-I&E ensures operational readiness by sustaining environmental quality through tracking projects, providing technical assistance and quality assurance, and execution of funds. ARNG-I&E provides policy guidance and resources to create, sustain, and operate facilities that support the ARNG. ARNG-TRS is responsible for training and training site support, which includes sustainable range management.

The NGB is responsible for providing natural resources management resources and policy for ARNG units across the nation. The majority of the funding for the completion and implementation of this INRMP is provided by the NGB. The NGB also provides environmental legal assistance, NEPA review, and other specialized technical support for implementing this plan. The chief of the ARNG-I&E reviews and signs the INRMP on behalf of NGB. The NGB is the federal entity that must comply with SAIA.

## **2.2.3 Other Federal Agencies**

### 2.2.3.1 United States Fish and Wildlife Service

Under SAIA, the USFWS is required to work in cooperation with military installations to develop INRMPs (Sikes Act SEC. 101. 16 USC 670a (a) (2)). Cooperative efforts with USFWS involve identifying potential endangered species on Camp Navajo. The USFWS also provides general information on other sensitive species, Species of Concern (SC), and habitat information. The USFWS has partnered with the NGB and the AZARNG to conserve and protect currently listed species and their habitats and to work with military partners to implement proactive conservation actions for SC and existing rare habitats. The USFWS is a cooperating and signatory agency for the implementation of this plan in accordance with the SAIA. The AZARNG will consult informally and/or formally with the USFWS prior to the implementation of any action included in the INRMP that may affect listed or candidate species. The AZARNG will cooperate with the USFWS on updating this document per the July 2013 Memorandum of Understanding (MOU) between the DoD, USFWS, and Association of Fish and Wildlife Agencies for a Cooperative INRMP on military installations.

### 2.2.3.2 United States Forest Service

The USFS is the land manager for federal property surrounding Camp Navajo. Biologists from the Coconino and Kaibab national forests contributed information on sensitive species and their habitat requirements for this document. Studies and experiments have been conducted on Camp Navajo by the Forest and Range Experiment Station in Flagstaff, the results of which have supplied insect, disease, and rodent control information to Camp Navajo NRMs. USFS personnel provide fire detection assistance for Camp Navajo by manning the lookout tower on the installation. Four other lookout towers on adjacent USFS lands provide additional fire surveillance. The Coconino and Kaibab national forests have been invited to review this INRMP.

## **2.2.4 State Agencies**

### **2.2.4.1 Arizona Game and Fish Department**

In accordance with the SAIA, AGFD is required to work in cooperation with any military installation to prepare an INRMP. Per SAIA: “the resulting plan for the military installation or State-owned National Guard installation shall reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources” (Sikes Act SEC. 101. 16 USC 670a (a) (2)). The AGFD is responsible for the management of fish and wildlife populations in the State of Arizona. The AGFD conducts wildlife research on Camp Navajo at the direction of the EMO. In addition to wildlife research, AGFD works with the AZARNG and other community partners to identify wildlife resources within the approved Army Compatible Use Buffer (ACUB) (see Section 3.6). The AZARNG will cooperate with the AGFD on updating this document per the July 2013 MOU between the DoD, USFWS, and Association of Fish and Wildlife Agencies for a Cooperative INRMP on military installations. The AGFD and the AZARNG at Camp Navajo will meet on an annual basis to agree upon harvest objectives, permit numbers, season dates, weapon types, and allocation of permits/access for elk, pronghorn, mule deer, and turkey. The AGFD also assists the AZARNG in enforcing state hunting regulations on Camp Navajo.

### **2.2.5 Tribes**

Camp Navajo will work with the Tribal government in policies and determinations that have Tribal implication to incorporate traditional knowledge and experience into its land management decisions. Natural resource and cultural managers will continue to promote enhanced and ongoing communication, cooperation, and trust with Tribes and consider the traditional knowledge, experience, and perspectives of Native American people to manage fish, wildlife, and natural and cultural resources. The AZARNG will work with the Tribal governments to determine and act in accordance with applicable treaty rights and trust responsibilities as they pertain to Camp Navajo.

### **2.2.6 County and Local Agencies**

Camp Navajo works cooperatively with Coconino County to identify and conserve county open space within the approved ACUB (see Section 3.6 for additional information). Coconino County, the Naval Observatory Flagstaff Station, and Camp Navajo completed a Joint Land Use Study conducted by military installations and the communities surrounding them.

### **2.2.7 Universities**

The AZARNG collaborates with universities to conduct research projects of mutual interest on Camp Navajo. Expertise from universities have been valuable in providing specialized knowledge needed to effectively manage natural resources on the installation. As of 2020, Camp Navajo is collaborating with Northern Arizona University (NAU).

### **2.2.8 Contractors**

Contractors are an asset used by the NRM to provide short-term studies and reports. Contractors have been used by the installation to develop plans for cultural and natural resources and complete the necessary documentation to comply with environmental legislation. Camp Navajo will likely continue to use contractors for projects related to implementation of the INRMP and forest and fire management plans as well as NEPA documentation. Contractors give Camp Navajo access to a wide variety of specialties and fields.

### 2.2.9 In-House Capabilities

The EMO has limited in-house research and special project capabilities due to a paucity of manpower. The EMO staff will continue to look for opportunities to bring project and research in-house to maximize funding. Currently, EMO uses GIS as a powerful in-house research tool used to store and analyze data on vegetation, wildlife populations, and range statuses. An upgrade to this system and its databases is in progress and can be used to support future projects described in this INRMP.

The Intergovernmental Personnel Act of 1972 (IPA) allows the AZARNG to conduct research or obtain personnel assistance from any state or federal agency. The IPA is a system allowing a state or federal agency to borrow other state or federal agency personnel for a limited time period to do a specific job. The agency pays the borrowed employee's salary and administrative overhead. There are two advantages to using this system: 1) personnel are directly supervised by the associated funds manager and 2) no manpower authorizations are required. Camp Navajo may use IPA agreements for assistance with special projects. The most likely sources of this assistance are agencies that are partners for implementation of this INRMP.

## 2.3 MANAGEMENT PHILOSOPHY

This INRMP will direct the Natural Resources Program at Camp Navajo and provide goals and objectives to guide management activities. An integrated planning approach was used to develop the policies, guidelines, and projects for each natural resource area within the plan. Implementation of this management plan will support the installation's military mission while protecting Camp Navajo ecosystems and their components. Plan expectations include the following:

- Provide guidance and continuity for existing and future natural resources management and staff;
- Establish a framework for implementing natural resources programs and ecosystem management;
- Provide centralized information on the Natural Resources Program;
- Identify environmental constraints so that military training can be synchronized with ecosystem sustainability;
- Identify mission-related impacts to natural resources and options for conflict resolution;
- Serve as a baseline of existing environmental conditions for future environmental planning and compliance projects;
- Assist installations in complying with environmental regulations;
- Identify, prioritize, and provide a timeline for long-term budget requirements; and
- Facilitate cooperation among the parties to the INRMP in implementing the plan.

The typical management programs addressed in an INRMP include training area management; land management; forest management; aquatic and terrestrial habitat management; special natural area management; fish and wildlife management; rare, threatened, and endangered species management; pest management; wildland fire management; recreational resource and activity management; and agricultural program management. The INRMP is a training-driven plan, created with a dual goal:

- To allow for the conduct of appropriate military training at levels necessary to maintain a full readiness posture for national defense and civil missions; and
- To provide for management of natural resources in an ecosystem-oriented, sustainable manner consistent with federal, state, and local regulations.

Benefits of the INRMP to the military mission include sustained use of Camp Navajo training lands, better distribution of military activities, and integration of the military training mission with natural resources management. The INRMP facilitates long-range, sustainable use of Camp Navajo and will enhance mission readiness and realism with more training options. The INRMP will also provide natural resources data, which can enable more intensive mission planning.

This INRMP emphasizes an ecosystem-based management approach to natural resources management, consistent with DoD policies. Ecosystems extend beyond installation boundaries, and management of Camp Navajo's natural resources will include development of partnerships with neighbors. Camp Navajo's mission activities are integrated and consistent with federal stewardship requirements and ensure the sustainability of quality training lands to accomplish Camp Navajo's military mission.

### **2.3.1 Ecosystem-Based Management**

An ecosystem is the “sum of the plant community, animal community, and environment in a particular region or habitat” (Barbour et al. 1987). Ecosystem-based management in the context of DoD installations may be defined as “a goal-driven approach to managing natural and cultural resources that supports present and future mission requirements; preserves ecosystem integrity; is implemented at a scale comparable with natural processes; is cognizant of nature’s timeframes; recognizes social and economic viability within functioning ecosystems; is adaptable to complex and changing requirements; and is realized through effective partnerships among private, local, state, Tribal, and federal interests” (DoD Instruction 4715.3).

Natural resources at Camp Navajo will be managed using an ecosystem-based management approach. Principles and guidelines of ecosystem-based management, per DoD Instruction 4715.03 (2018), state that installations will:

- Avoid single-species management and implement an ecosystem-based multiple species management approach, insofar as that is consistent with the requirements of the ESA.
- Use an adaptive management approach to manage natural resources such as climate change.
- Evaluate and engage in the formation of local or regional partnerships that benefit the goals and objectives of the INRMP.
- Due to policy and fiscal implications, coordinate in advance partnerships involving external stakeholders or multiple military services through DoD component chains of command.
- Include natural resources personnel in the planning and implementation phases of all resulting agreements.
- Use the best available scientific information in decision-making and adaptive management techniques in natural resource management.
- Foster long-term sustainability of ecosystem services.



DoD management strategy identifies the INRMP as the primary vehicle to implement biodiversity conservation on military installations. The model process developed within the strategy includes the following principles:

- Support the military mission;
- Use joint planning between NRMs and military operations personnel;
- Integrate biodiversity conservation into the INRMP and other planning protocols;
- Involve internal and external stakeholders up front;
- Emphasize the regional (ecosystem) context; and
- Concentrate on results.

Specific management practices identified in this INRMP have been developed in mutual agreement with USFWS and AGFD to enhance and maintain biological diversity within the ecosystems at Camp Navajo.

## **2.4 CONDITIONS FOR IMPLEMENTATION**

### **2.4.1 Implementation**

The EMO is responsible for directing the management of natural resources and for the development and implementation of the INRMP. Successful implementation of the INRMP will require:

- Administrative and technical support;
- Agency cooperation and technical assistance;
- Funding;
- Priorities and scheduling;
- Production of project scopes and budgets; and
- The ability to amend and revise this document as necessary.

Where projects identified in the plan are not implemented because of lack of funding or other compelling circumstances, the installation will review the goals and objectives of this INRMP to determine whether adjustments are necessary.

### **2.4.2 Effectiveness**

The primary measure of INRMP effectiveness is whether it helps prevent “net loss in the capability of military lands to support the military mission.” The AZARNG is preserving Camp Navajo’s capability to support training through its natural resource management practices outlined in this INRMP. The AZARNG works with several partners to manage the forest, conserve sensitive areas, and practice effective soil conservation. These activities are coordinated through ongoing INRMP implementation.

Long-term management effectiveness is also evaluated through periodic inventories of species populations, habitat quantity and quality, and habitat values through recurring planning-level surveys. Trends can be used to indicate the degree of success. The AZARNG will evaluate these recurring data as they become available.

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## SECTION 3 INSTALLATION OVERVIEW

### 3.1 LOCATION AND AREA

Camp Navajo is located in north-central Arizona, 12 miles west of Flagstaff (population 73,964), 17 miles east of Williams (population 3,023), and adjacent to the small community of Bellemont (approximate population 300) located along I-40 (USCB 2017) (**Appendix A, Figure 1**). The installation is located in a small topographic basin of the San Francisco Plateau within south-central Coconino County between the Coconino and Kaibab national forests (Ebasco 1990). The installation comprises approximately 28,413 acres which are used to support various National Guard training missions and the installation's munitions/missile storage mission. Approximately 28,397 acres of the installation is federal land, while the State of Arizona (AZDEMA) owns approximately 15 acres that encompass Bellemont Armory and the Facility Maintenance shop. An approximately 60-acre veteran's cemetery owned by the State of Arizona (Department of Veteran's Services) is within the Camp Navajo boundary. Approximately 916 acres are improved and include lawns, ball fields, parade and drill grounds, landscaped plantings, roads, buildings, and structures. Additionally, 1,752 acres are semi-improved and 25,745 acres are unimproved (**Appendix A, Figure 11**). The semi-improved grounds are those in the ammo storage area, security clear zone, and adjacent to utility lines. The unimproved grounds are woodlands, ponds, buffer areas, roadsides, and the areas surrounding storage facilities.

### 3.2 INSTALLATION HISTORY

Prior to military use, the land was used for homesteading, ranching, and logging. Lands for the installation were either purchased or taken from private landowners and added to lands that were transferred from the Kaibab and Coconino national forests. These combined lands formed the Navajo Ordnance Depot (NOD) in 1942. The site was selected based on its proximity to a major railroad with access to the west coast, 100 miles beyond the operational envelope of the Japanese carrier-based aircraft. The primary mission of the NOD was ammunition storage, with the original complex consisting primarily of storage and support facilities. The majority of the labor for the construction of buildings and ammunition storage units were supplied by the Navajo and Hopi Indian Reservations and other Native American workers. Construction was completed in 1943 (AZARNG 1993; Ebasco 1990).

In 1945, NOD's mission was expanded to include a prisoner of war camp for Austrian soldiers. This expanded mission continued until the end of World War II. Storage of chemical warfare service munitions, explosives, and ammunition continued throughout this time. NOD became a backup facility for the Erie Ordnance Depot in Ohio and later the Benicia Arsenal in California. Peak employment at NOD occurred in 1945 with 2,173 personnel (AZARNG 1993; Ebasco 1990).

Building continued into the late 1950s, during which time NOD stored a stockpile of chemical munitions. These chemical munitions were removed and disposed of in 1958. In 1967, the NOD was designated a Defense Supply Agency Depot. In 1971, it was renamed the Navajo Army Depot Activity (NADA) and placed under the command of the Pueblo Army Depot in Colorado. In 1982, the AZARNG assumed operational control of NADA and performed the Army Depot System Command's (DESCOM's) mission of receipt, storage, shipping, maintenance, and disposal of munitions to enhance the training of AZARNG units. In 1988, NADA was closed as a federally funded and controlled facility under the Base Realignment and Closure (BRAC) process but continued to store ammunition through 1992 using funding provided by DESCOM while the AZARNG used the installation as a training facility. In 1993, the

installation's name was shortened to Camp Navajo. Currently, the Camp Navajo mission includes training AZARNG Soldiers, operating a storage depot, and providing an alternate site for state emergency operations. A large portion of the land surrounding Camp Navajo is undeveloped and managed by the USFS and ASLD (**Appendix A, Figure 1**). Public access is restricted to the majority of Camp Navajo for security and safety reasons.

### 3.3 MILITARY MISSION, FACILITIES, AND TRAINING

#### 3.3.1 Military Mission

Camp Navajo exists to support military training for the AZARNG. Camp Navajo is a major NGB training area used primarily by Army and Air National Guard units (transportation, engineer, MP, aviation, ordnance, medical, quartermaster, and other branches) for annual and weekend training. Additionally, Camp Navajo serves as a training site for both the active and reserve component units of the armed services. As an ARNG training area, Camp Navajo also supports the Arizona Regional Training Institute's primary training programs: Non-Commissioned Officer Education System, Officer Candidate School, and Military Occupational Specialty-Transitions schools.

Camp Navajo also conducts munitions and missile storage missions. A supplemental part of the installation's mission continues to be the receipt, storage, shipping, and maintenance of various DoD commodities, predominantly munitions and missile motors. Camp Navajo Ordnance Operations Department (OOD) bids for storage contracts from all branches of the DoD. Storage facilities consist of 788 ammunition igloos, general purpose warehouses, and a rocket motor transfer facility encompassed within approximately 11,378 acres (40 percent of the installation) of the Ammunition Storage Area (ASA). The rocket motor transfer facility is used to transfer rocket motors from rail and truck transportation to intra-installation conveyances that transport rocket motors to long-term storage. The igloos are used for long-term storage of conventional ammunition and missile components, while Y-sites, located directly adjacent to igloos, are open-air sites used to provide temporary or long-term storage facilities for items that do not require covered storage.

#### 3.3.2 Facilities

Camp Navajo can be roughly divided into four areas based on training, facilities present, and use (**Appendix A, Figure 2**):

1. The Cantonment Area, which includes headquarters, training sites, the Field Maintenance Shop, and a warehouse area.
2. The ASA, which stores various commodities, predominately munitions and missile motors.
3. Six Environmental Restoration Program sites totaling 2,131 acres contain residual contamination from former Army depot operations (**Appendix A, Figure 12**). Due to human health and safety concerns and in accordance with the Comprehensive Environmental Restoration, Compensation, and Liability Act and the Restoration, Conservation, and Recovery Act, land use controls have been implemented at these sites. The land use controls restrict access and limit activities which may impact natural resource management projects in these areas.
4. The buffer area, which was designed to provide safe distances between storage facilities and off-post land and is now used primarily for training. The small arms complex is located in the buffer in northwestern corner (see Section 3.3.3).

### 3.3.2.1 Cantonment Area

Camp Navajo maintains 170 buildings, the majority of which are used for administration, maintenance, operations, and general storage. A large number of the support buildings and facilities are located in the north-central portion of the installation. Facilities include administration buildings, billeting, workshops and work areas, motor pools, surveillance facilities, a fire and rescue facility, approximately 2.3 million square feet of explosive and general-purpose warehousing, materials handling, loading/unloading, transshipment facilities, and both rail and truck loading facilities for warehousing.

In 1993, a battalion-sized facility consisting of nine buildings was constructed in the installation's Cantonment Area to provide accommodations for military units training at Camp Navajo. This 600-person facility is also used for billeting of military personnel during non-training activities.

The AZARNG erected one 10-kilowatt wind turbine as a working demonstration project to illustrate the application of wind energy and offset electrical consumption at Camp Navajo. The wind turbine tower is a 100-foot-tall, guyed, lattice, tilt-up tower. The wind turbine was installed in the northern portion of Camp Navajo within the Cantonment Area.

A more detailed description of these facilities, training ranges, and buildings are described in the *Camp Navajo Real Property Development Plan* (November 2017).

### 3.3.2.2 Environmental Restoration Program Sites

The following six sites have land use controls in place due to health and safety concerns (**Appendix A, Figure 12**). The following natural resource management projects, especially intrusive activities, may be limited and must be coordinated with the AZARNG EMO Restoration Program manager:

- The 701-acre Post-Closure Permit Area (PCPA), along with its 1,340-acre kick-out area (Solid Waste Management Unit Munitions Response Work Area [SWMU MRWA] 02-02), is a former open burn/open detonation (OB/OD) area. Munitions and explosives of concern (MEC) are known to be present in surface and subsurface soil in the PCPA. No entry into the PCPA is allowed without authorization from the garrison commander and without escort by explosive ordnance disposal (EOD) or unexploded ordnance (UXO)-qualified personnel. Surface MEC were removed from SWMU MRWA 02-02, but subsurface MEC may remain. No intrusive activities are allowed in SWMU MRWA 02-02 without coordination with the AZARNG EMO Restoration Program manager and UXO construction support if warranted.
- The 25-acre Old EOD Range, along with its 637-acre kick-out area (not shown on **Figure 12** in **Appendix A**), is also a former OB/OD area that was later used for training by AZARNG EOD units. Surface MEC were removed, but subsurface MEC may remain in both areas. Non-intrusive activities are allowed in both areas, but no intrusive activities are allowed in the Old EOD Range without coordination with the AZARNG EMO Restoration Program manager and UXO construction support if warranted.
- The 41-acre Former Pyrotechnic Range was used for surveillance testing of munitions. Surface or subsurface MEC are not suspected to be present, but awareness of the possibility that MEC may be present is maintained. If MEC is discovered at this site, the hazard will be re-evaluated.

- The 4-acre TNT Washout Facility was used for the refurbishing of military munitions. A perched water-bearing zone located between 10 and 20 feet below the ground surface is contaminated with explosives. No intrusive activities are allowed that would impact site conditions or damage the groundwater monitoring wells.
- The 15-acre Former Sanitary Landfill was used for the disposal of household and industrial wastes. It was capped and closed in 2001. To protect the integrity of the grass-covered engineered cap, along with the associated surface water controls and groundwater monitoring wells, no intrusive activities are allowed at this site.
- The 5-acre Construction Debris Landfill #5 was used to dispose of building debris from the demolition of housing units in Indian Village. The landfill was removed, but low concentrations of contaminants remain in the surface soil. Non-intrusive activities are allowed; however, no intrusive activities are allowed within the footprint of the former landfill.

Prior to 1994, health and safety concerns prevented active management of the natural and cultural resources in these areas. However, NGB and AZARNG worked closely with USFWS, AGFD, SHPO, and local agencies to inventory the resources and mitigate potential impacts caused by the Army's Environmental Restoration Program activities. Investigations, particularly within the PCPA, included the following:

- Biological resources studies;
- Surveys for rare, threatened, and endangered plant and animal species;
- Neotropical migrant birds, elk, and pronghorn studies;
- MSO surveys;
- Vegetation mapping;
- Reconnaissance-level tissue sampling at the OD pits;
- Cultural resource inventories;
- Soil sampling;
- Geological mapping;
- Geophysical surveys;
- Frost depth and frost heave study;
- Surface water and groundwater sampling;
- Human and ecological risk assessments;
- Soil excavation, biological treatment, and disposal; and
- MEC characterization, removal, and demolition.

While explosive and chemical hazards remain, non-intrusive monitoring of natural resources will continue.

### 3.3.3 Training Areas and Activities

Camp Navajo is a major training facility for the AZARNG and other military and civilian units/organizations to support readiness requirements and training missions. Under National Guard Regulation 5-3 Camp Navajo is considered a Level III Garrison Training Center (formerly a Maneuver Training Center-Light) meaning that it is a training installation that supports individual and collective training for multiple battalions. Aviation, engineer, quartermaster, transportation, MP, and light infantry units commonly train at Camp Navajo (AZARNG 1993), which provides a training experience that simulates wartime conditions. Camp Navajo is divided into 14 training areas (**Table 1**). The land use within each training area is depicted in **Appendix A, Figure 2**.

TABLE 1 LAND USE WITHIN EACH AREA OF CAMP NAVAJO, BELLEMONT, ARIZONA				
Training Area	Location	Use	Acres	Number of Use Days Per Year*
Cinder Pit	Eastern portion, adjacent to ASA	Engineering and rock crushing operations, hunting	203	Military use ~12 days plus hunters
Tappen Springs	Eastern portion	Multi-use training areas for bivouac and limited tactical training as well as camping	351	Military use ~1,702 days plus hunters
Cantonment Area	Northern portion, near I-40 and railroad	Administrative buildings, classrooms, and multi-use	430	Regular use, daily
Railroad Tank	Southern portion, includes Volunteer Canyon	Multi-use training for bivouac, limited tactical training, and hunting	430	Military use ~156 days plus hunters
Cinder Pit	Western portion, adjacent to ASA	Engineer training area	1,595	Military use ~12 days plus hunters
Small Arms Complex	Western portion	Small arms training and hunting	330	Military use ~3,330 days plus hunters
Indian Village	Northern portion, near I-40 and railroad	In the past used for multi-use training for bivouac, limited tactical training, and hunting	419	Military use ~6,393 days plus hunters
Metz Tank Area	Southern portion	Multi-use training for bivouac, limited tactical training, and hunting	2,914	Military use ~171 days plus hunters
Land Navigation	Northwest portion, near I-40 and railroad	Land navigation course and common task training	735	Military use ~4,550 days

<b>TABLE 1 LAND USE WITHIN EACH AREA OF CAMP NAVAJO, BELLEMONT, ARIZONA</b>				
<b>Training Area</b>	<b>Location</b>	<b>Use</b>	<b>Acres</b>	<b>Number of Use Days Per Year*</b>
Neill Flat	Northeastern portion, near I-40 and railroad	Multi-use training area for bivouac and limited tactical training	1,313	Military use ~321 days
Logger's Camp	Southwestern portion, near Rogers Lake	Multi-use training area for bivouac and limited tactical training	2,033	Military use ~171 days
Jeep Trail	Western portion includes Volunteer Mountain	Multi-use training area for bivouac, limited tactical training, and hunting	3,539	Military use ~241 days plus hunters
Mickle Tank	Southwestern portion	Multi-use training area for bivouac, limited tactical training, and hunting	1,877	Military use ~156 days plus hunters
PCPA	South-central portion	No training or recreational use permitted; may be used as a small-arms range Surface Danger Zone in the future	701	Post-closure care ~30 days
ASA	Central portion	Maintenance of igloos and hunting	11,378	Regular daily use, plus hunting

\* Use Days = The equivalent of 1 person using the installation for 1 day.

The Small Arms Complex is in the northwest corner of Camp Navajo and is on approximately 330 acres (**Appendix A, Figure 2**). The complex consists of the following ranges:

<b>TABLE 2 SMALL ARMS RANGE COMPLEX</b>		
<b>Small Arms Complex</b>	<b>Area</b>	<b>Use</b>
5.56-millimeter Semiautomatic Rifle (M16) Modified Record Fire Range	~68 acres	Live fire used to train and test individual Soldier's qualification requirements with the M16 and M4 rifles
Hand Grenade Qualification Course	~3 acres	Only practice grenades are used
Combat Pistol Qualification Course	~2 acres	Qualification requirements for the 9-millimeter, .38 caliber, and .45 caliber pistols
40-millimeter Grenade Launcher on M16 (M203)	~16 acres	Training and qualification requirements of the M203



### 3.3.4 Transportation System

Camp Navajo has about 75 miles of paved roads, 152 miles of cinder roads, and several miles of unimproved road throughout the training and storage areas. Access to the installation is from I-40 at Exit 185 (AZARNG 2017). Camp Navajo also has access to the main line of Burlington-Northern and Santa Fe (BNSF) Railway's railroad and railhead operations.

Camp Navajo has a helipad used exclusively by the AZARNG that is located east of the vehicle entrance gate in the Cantonment Area. The closest airport to Camp Navajo is Pulliam Municipal Airport, located 11 miles east of the installation off I-17 south of Flagstaff.

### 3.3.5 Wastewater Treatment Plant Reuse Area

The AZARNG developed a wastewater treatment facility, which is connected to the existing plant. Completed in 200, the facility improves wastewater treatment and increases treatment capacity. An effluent reuse area was established as part of the new facility. The 20-acre reuse area southeast of Pond 1 has been graded, leveled, and seeded with native grasses and forbs. Reclaimed water is applied to the surface in vegetated areas designed to recycle the wastewater in an evapotranspiration process.

## 3.4 REGIONAL LAND USE

A large portion of the land surrounding Camp Navajo is undeveloped and managed by USFS, ASLD, and private holdings, with the Kaibab and Coconino national forests land being the predominant land holders (**Appendix A, Figure 1**). The BNSF Railroad forms the northern boundary of the installation, beyond which lies the small town of Bellemont and I-40. The Kaibab National Forest is interspersed with small tracts of private property and bounds Camp Navajo on the west. The east side of the installation is bordered by Arizona State Trust Land managed by the ASLD, mixed with a few privately held parcels. The southern boundary of Camp Navajo is adjacent to the Coconino National Forest, along with some small tracts of private land.

The urbanized limits of the City of Flagstaff are approximately 5 miles from the Camp Navajo boundary. Within the rural boundary are primary residences and second homes. Public lands in this area attract recreation and tourism. Both private and public lands surrounding the installation are used for cattle and sheep grazing. Industrial land use also occurs in this area. The forested areas have very little timber value, although there have been attempts to develop markets for small-diameter ponderosa pine (*Pinus ponderosa*). The current and potential sales of State Trust Lands around Camp Navajo could greatly increase encroachment in the area, thus increasing the potential for conflicts with Camp Navajo's mission. The Coconino County Parks and the Open Space Program have identified several sections of State Trust Lands along the eastern boundary of Camp Navajo which are also part of NAU's Centennial Forest. These lands qualify for open space acquisition and are part of the Camp Navajo ACUB Program (Section 3.6), but as of the date of this plan, adequate funds are not available.

## 3.5 LOCAL AND REGIONAL NATURAL AREAS

Within 10 miles of the Camp Navajo boundary, there are several natural areas that attract various forms of recreational use. The USFS, Coconino and Kaibab national forests lie adjacent to portions of Camp Navajo and are the nearest natural areas to the installation. The San Francisco Peaks lie to the northeast and encompass the Kachina Peaks Wilderness Area, Lamar Haines Memorial Wildlife Area, and Humphreys Peak, the highest point in Arizona (12,633 feet). The popular Oak Creek Canyon and

Sycamore Canyon/Sycamore Canyon Wilderness lie to the south and exemplify the variation in landscape and vegetation found in the spring-fed riparian systems that occur within the Colorado Plateau. True tundra occurs at and above the tree line on the San Francisco Peaks. High-elevation forest communities vary and include meadows and mixed conifer, broadleaf deciduous, aspen, and pine-oak communities. Lower elevations in the region include oak and pinyon-juniper woodlands that grade into interior chaparral and grassland communities in Oak Creek Canyon near Sedona. Additional natural areas within 10 miles of Camp Navajo include Walnut Canyon National Monument, Rogers Lake County Natural Area, Fort Tuthill County Park, and the 959 Pumphouse County Natural Area, all of which are east of Camp Navajo.

### **3.6 ARMY COMPATIBLE USE BUFFER**

The AZARNG at Camp Navajo participates in the ACUB Program. The Camp Navajo ACUB proposal was approved on 16 January 2015. A successful ACUB Program will protect and sustain the National Guard training mission as well as the munitions storage mission at Camp Navajo (now and into the future). The AZARNG is currently working with the Central Arizona Land Trust to protect land adjacent to Camp Navajo. For more information please see the *Army Compatible Use Buffer proposal (Maneuver Training Center, Camp Navajo, Arizona* proposal, July 2013) which can be accessed in the Administrative Record, available at the EMO at Camp Navajo.

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## SECTION 4 PHYSICAL ENVIRONMENT

### 4.1 CLIMATE

The climate of north-central Arizona is semiarid and characterized by cold winters, mild summers, and low humidity. The majority of days and nights are clear to partly cloudy. Prevailing wind direction is south-southwest, with an average speed of 7.4 miles per hour (Ebasco 1990). The mean annual temperature is 46.3 degrees F (Fahrenheit), with extremes (recorded in Flagstaff) of 97 degrees F and -30 degrees F (NOAA 2014). Annual average precipitation is 22 inches. There are two wet seasons, a winter wet season and a monsoon season, that occur during the months of December to March and July to September, respectively (NOAA 2014). Snowfall typically occurs between October and May. Snow and rain can co-occur. Average annual snowfall totals 102 inches; however, some winters have recorded less than 12 inches (NOAA 2014). Because of the dry climate, evaporation is significant, causing losses of 60 inches of water per year from exposed water surfaces (Ebasco 1990).

The wildfire season typically begins in early spring when winter precipitation and snowpack dissipate. A dry spring and summer period typically precede the monsoons that begin in July. Lightning and rain during monsoon storms (July to September) can affect the end of wildfire season and the prescribed fire program. The primary source of fire ignition at this time is lightning; however, humans commonly ignite wildfires on the surrounding public lands (Westerling et al. 2003). To reduce the likelihood of fire caused by military activities, restrictions have been placed on certain training enhancers when fire danger levels are heightened, such as the use of tracers, smoke grenades, and other flame-producing devices. These items can be used without restriction during times of low fire danger.

Changes in climate patterns have the potential to affect local ecosystems on Camp Navajo and may require new approaches to land management. Through continued research on Camp Navajo, the AZARNG, with assistance from cooperating groups (e.g., USFWS and AGFD), will continue to amass information on the species and ecosystems on and around Camp Navajo. This information will be used to develop and refine land management practices in response to changes in climate patterns, while fulfilling the AZARNG's requirement to maximize training opportunities available at Camp Navajo.

### 4.2 LANDFORMS

Camp Navajo is in the Grand Canyon section of the Colorado Plateau physiographic province and within the San Francisco volcanic field. The topography is characterized by a basin-like valley of flat prairies, with a border of rolling forested hills extending around the basin interspersed with canyons, washes, and several volcanic cones (**Appendix A, Figure 3**). The average elevation of the installation is 7,100 feet above mean sea level (AMSL) in the northern and central portions, while the peaks and ridges of the east, south, and west average 7,500 feet AMSL. The highest point on Camp Navajo is Volunteer Mountain (8,047 feet AMSL), and the lowest point is located in the southwest corner where Volunteer Canyon (6,770 feet AMSL) crosses the western installation boundary.

The steep slopes of Volunteer Mountain and Volunteer Canyon prevent the use of vehicles for training maneuvers at these sites. The areas most suitable for training are in the western and eastern portions of the installation (Indian Village, Neill Flat, the ASA, and Metz Tank).

## 4.3 GEOLOGY AND SOILS

### 4.3.1 Geology

Camp Navajo is underlain by a thin veneer of Quaternary and Tertiary unconsolidated materials, volcanic rocks, and a thick sequence of Permian and older sedimentary rocks (**Appendix A, Figure 4**). The unconsolidated materials consist of aprons and fans of colluvium and alluvium adjacent to the lower flanks of some cinder cones and along ephemeral washes. Thirteen volcanic vents and associated lava flows were extruded onto the Permian Kaibab Formation. Below the Kaibab Formation are the Permian Toroweap Formation, Coconino Sandstone, Schnebly Hill Formation, Supai Formation, and the Mississippian Redwall Limestone (Wolfe et al. 1987).

### 4.3.2 Soils

The Natural Resources Conservation Service (NRCS) (NRCS 2000) identified 17 soil units on Camp Navajo (**Appendix A, Figure 5**). Eighty-five percent of the soils on Camp Navajo consist of Cabezon and Huachuca very stony loams; Mento very gravelly loam; Nibley gravelly loam; and the Nibley-Huachuca, Thimble-Kellypoint, and the Vitrandic Haplustalfs-Vitrandic Haplustolls families' complexes. These soils are derived from the decomposition of the underlying bedrock and unconsolidated materials, and they vary in depth and proportions of sands, silts, and clays (soil texture) (USATHAMA 1979).

Movement throughout the installation can be restricted because of soil conditions. When soils become saturated, vehicular movement off established roads and trails becomes difficult. To protect the soils and their native plant communities, vehicle use is confined to designated roads and trails during the winter and spring when the ground is wet.

#### 4.3.2.1 Soil Erosion, Frost Heave, and Soil Expansion

Erosion is not a significant problem on Camp Navajo because snowmelt and rainfall are seldom great enough to generate erosion (NADA 1987a). Many areas have a thick duff cover that protects the soil. Roads are the largest source of soil erosion on the installation, and several roads in the southeast section of the installation have lost their shallow topsoil. Re-vegetation of exposed surfaces helps reduce and potentially prevent erosion. Vegetation loss from repeated military use, especially at commonly used bivouac sites, can result in the loss of soil from rainfall, runoff, and wind erosion. Camp Navajo's Forest Management Plan (**Appendix E**) specifically avoids timber harvest operations or removing cover in areas with greater than 30-percent slopes due to equipment limitations and to minimize erosion.

Because of the high elevation and cold winter temperatures, the soil is prone to freezing. The Camp Navajo soils freeze up to 2 feet in depth, with numerous freeze/thaw cycles throughout the winter. Freezing causes the soil to loosen and expand, making it more prone to erosion. Freezing may also heave gravel, stones, and other dense objects such as MEC. The intensity of frost heave varies according to soil type and water content. Bare soil is more susceptible to freezing than soil insulated by snow or duff (Young and Springer 2005).

## 4.4 WATER RESOURCES

### 4.4.1 Surface Water

Camp Navajo has approximately 100 acres of potentially regulated water bodies (Mauney et al. 2001). Surface water can be found at several small wetland areas, ephemeral streams and washes, marshy meadows, small perennially spring-fed man-made ponds, several small springs, and earthen water tanks (Ebasco 1990) (**Appendix A, Figure 6**). Surface water is limited, and there are no permanent, naturally occurring streams or lakes on the installation. See *Section 4.4.3 Wetlands* for further discussion of wetlands on Camp Navajo.

Annual runoff averages less than 1.25 inches, with spring runoff providing the majority of stream flow (AZARNG 1993; Ebasco 1990). The intermittent runoff from Volunteer Wash drains into Sycamore Canyon and subsequently into the Verde River (**Appendix A, Figure 6**) (Ebasco 1990). Approximately 19 miles of the 131-square-mile Volunteer Canyon Watershed fall within the installation (USATHAMA 1979). From 1966 to 1980, peak annual runoff in Volunteer Wash ranged from 0 to almost 2,300 cubic feet per second (Ebasco 1990). Runoff in Volunteer Wash has not been measured since 1980; therefore, current measurements are not available.

The majority of Camp Navajo's surface water flow does not leave the installation as runoff (Ebasco 1990). Contributing factors include the interruption of surface flow, the detention of runoff, and the existence of earthen water tanks and sink holes. Rapid infiltration and recharge of the groundwater occurs in areas with very porous or fractured basalt; whereas areas with clay soils tend to absorb more water (NRCS 2000).

Three springs (two perennial and one intermittent) located north of the building complexes in the ammunition workshop area produce relatively low and variable yields of water (USATHAMA 1979). Overflow from the water pumped from the natural spring is stored in Pond 1 (5.9 acres), Pond 2 (1.5 acres), and Pond 3 (0.5 acre).

Fourteen earthen water tanks, man-made ponds, are located throughout the buffer area and provide water for wildlife. Atherton Lake (Stan's Pond) south of the ASA is part of an ephemeral sinkhole complex that usually dries up each summer by August.

### 4.4.2 Groundwater Resources

The Coconino aquifer is the primary water source for the City of Flagstaff and southern Coconino County, including Camp Navajo. This regional unconfined aquifer (C-aquifer) is approximately 1,500 feet below ground surface (bgs) (Ebasco 1990) and is comprised of the Coconino Sandstone and Supai Formation.

Groundwater occurs in small perched water-bearing zones associated with fractured lava flows and the Kaibab Formation, a layer of unconsolidated volcanic ash thought to be a former lake bed. This lake bed underlies the uppermost lava flow west of the Cantonment Area and coincides with the nearby cluster of springs at Ponds 1, 2, and 3. The clay found in this layer can create a solid impermeable space, or aquiclude, which appears to be responsible for the perched water table in the area.

The Kaibab Formation limestone is locally fractured and jointed along the Bellemont fault, creating karst features such as sinkholes that may act as conduits for rapid water infiltration to the regional aquifer (Akers 1962; Akers et al. 1964; Montgomery and Dewitt 1974; Scott 1974).

A deeper regional aquifer with water levels approximately 1,400 to 1,500 feet bgs was first tapped in 2003 and now ensures a dependable backup water supply during periods of drought. However, local faults and sinkholes may provide conduits between the surface and the regional aquifers. The regional “C-aquifer” and the deeper “R-aquifer” are the primary municipal drinking water sources throughout the Bellemont and Flagstaff areas. They also discharge to springs as far away as Verde Valley to the south and Grand Canyon to the north. Camp Navajo is near the groundwater divide and its largely undisturbed lands act as an important recharge area (Wilkinson 2000). Water quality of the regional aquifer wells on Camp Navajo and some wells in Bellemont are monitored as a condition of the Arizona Hazardous Waste Management Act Post-Closure Care Permit (ADEQ 2017).

The water supply for the installation is obtained from springs in a shallow perched water table and from a regional aquifer well located north of Pond 1 (**Appendix A, Figure 6**). All water sources in use have been permitted by the Arizona Department of Environmental Quality (ADEQ) as potable water and are subject to the Safe Drinking Water Act (SDWA). The AZARNG conducts all monitoring required by regulations promulgated under the SDWA by the Environmental Protection Agency (EPA) and ADEQ. Droughts can severely impact the water supply and thus, the mission at Camp Navajo. The maximum potable water production available to the installation is 246,000 gallons per day (AZARNG 1993). This water production supports the domestic requirements of 1,480 people at a rate of 150 gallons per person per day, as well as the installation fire suppression system. In 2002, the AZARNG developed a 2,080-foot-deep well north of the wastewater treatment plant to provide supplemental water to the installation.

The water distribution system was installed in 1942 and consists of a network of pipes ranging in diameter from 4 to 12 inches. The majority of the piping is cast iron, with a few sections constructed from galvanized steel or asbestos cement. The layout of the water distribution system contains numerous looped networks. This layout provides the ability to isolate a section of the system without disrupting the water supply to other areas. Planned upgrades and replacements to the existing water distribution system are scheduled as needed and as funding is made available.

Water storage capacity on the installation includes 3 spring-fed water reservoirs (Ponds 1, 2, and 3) that hold a total of approximately 26 million gallons. In addition, the installation has 3 storage tanks: a 1,000,000-gallon capacity tank, a 250,000-gallon clear well, and a 500,000-gallon elevated tank. The elevated tank is primarily used for the installation’s daily water supply and includes fire suppression capacity for some buildings equipped with sprinklers. Additionally, Camp Navajo has 9 railroad tanker cars: two 7,000-gallon, two 11,000-gallon, and five 20,000-gallon capacity tanker cars. These are placed strategically throughout the ASA’s existing rail system to support fire-fighting activities.

#### 4.4.3 Wetlands

To estimate the extent of wetlands and other potential Waters of the United States (WOTUS) on Camp Navajo, a planning-level survey was conducted in April 2015 by SWCA Environmental Consultants (SWCA 2015). The planning-level survey located approximately 100 acres (0.35 percent) of wetlands and shallow water habitats in the classes of palustrine/open water (35 acres) and palustrine/emergent and

upland mosaic (25 acres) wetlands and 35 miles of stream class riverine/intermittent (R4SB) (**Appendix A, Figure 6**). All of these areas are potentially regulated as WOTUS under Section 404 of the Clean Water Act (CWA) (SWCA 2015). See Section 5.2.2.7 for additional information with regards to the vegetation found within these wetlands.

#### **4.4.4 Floodplains**

There are several areas designated as 100-year floodplains by the Federal Emergency Management Agency. Sites meeting the criteria for 100-year floodplain are concentrated in two areas located near the Cantonment Area: areas near Atherton Lake, Pipe Springs, and along ephemeral streams flowing toward Volunteer Canyon (**Appendix A, Figure 6**). Flooding is rarely a problem on Camp Navajo due to the extensive network of open ditches, culverts, and storm sewer piping system adequate to accommodate current surface runoff. Flooding has occurred occasionally in the past due to clogged culverts. With the changing climate, rain events in Arizona are less frequent and occasioning more intense. There is a potential with the extreme rain events for flooding to occur more frequently. Future planning for building and infrastructure will consider those effects prior to construction.



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## SECTION 5 ECOSYSTEMS AND THE BIOTIC ENVIRONMENT

### 5.1 ECOSYSTEM CLASSIFICATION

Under the National Hierarchical Framework of Ecological Units, Camp Navajo falls into the White Mountains–San Francisco Peaks section of the Arizona–New Mexico Mountains Semi desert–Open Woodland–Coniferous Forest–Alpine Meadow Province, under the Tropical/Subtropical Steppe Mountains Regime of the Dry Domain (Bailey 1995). This ecoregion covers 50,200 square miles of Arizona and New Mexico. This classification implies that the cool, dry climate of the region has a direct role in the formation of its physical geography and that the interplay of both climate and the regional landscape are the driving forces that determine biotic communities.

The vegetative characteristics of Camp Navajo place the area predominately in the Rocky Mountain (Petran) Montane Conifer Forest biome (122.3 in Brown [1994] classification) (**Appendix A, Figure 7**). Some areas contain plants characteristic of the Great Basin Shrub–Grassland biome (142.2 in Brown [1994] classification) (CEMML 1997; Moore and Covington 1998; TRIES 1996).

### 5.2 VEGETATIVE COVER

#### 5.2.1 Vegetative Cover

Camp Navajo has approximately 19,018 acres of forest and 9,395 acres of grassland on the installation. Forested areas are predominantly ponderosa pine or pine/oak. Mixed conifer stands are associated with Volunteer Mountain or Volunteer Canyon and occupy approximately 602 acres. Aspen occurs infrequently on Camp Navajo and in small stands generally less than 3 acres in size.

The present condition of forest stands on the installation is very different from pre-Euro-American settlement condition. Forest structure has changed from an open forest dominated by relatively large, mature trees to a dense forest characterized by relatively small, young trees (Fulé et al. 1997). Increased tree density and dead woody biomass has resulted in decreased herbaceous ground cover. In addition, grasslands have been reduced from historic level due to encroachment by ponderosa pine (**Appendix A, Figure 8**).

Changes in forest structure can be attributed to the suppression of a naturally occurring fire regime that began in the late 1800s for the purpose of protecting livestock grazing, roads, and other infrastructure (Covington and Moore 1994). The mean pre-settlement fire interval on Camp Navajo between 1637 and 1883 was between 3.7 to 6.5 years (Fulé et al 1997). Since 1883, fire has been suppressed and excluded from the area. As a result, forest density has increased from an average of 60 trees/acre in 1883 to 512 trees/acre by 1995, turning a once open forest dominated by relatively large ponderosa pines into a dense forest characterized by relatively small and young trees. Species composition has also changed, shifting away from the more frequent fire-adapted ponderosa pine and towards less adapted Gambel oak (*Quercus gambelii*) and conifers (e.g., white fir [*Abies concolor*] and Douglas fir [*Pseudotsuga menziesii*]). The comparison shows that the contemporary forest is well above the range of pre-settlement variability in forest density, and both live and dead fuel structures have developed that can support high-intensity wildfire (Fulé et al. 1997).

The AZARNG contracted NAU in 1993 to develop a vegetation community map based upon forest community types as part of the Forest Ecosystem Restoration Project. This vegetation community map was updated by NAU in 2012 (**Appendix A, Figure 7**).

## 5.2.2 Plant Communities

Surveys have been conducted to identify and locate different plant communities on Camp Navajo. The surveys are the initial step in the protection and maintenance of diverse ecosystems. These botanical surveys were started in 1992 when the Center for Environmental Management of Military Lands conducted a botanical survey of 46 acres on the east side of the ASA. A total of 118 taxa were collected. *Asteraceae* (sunflower family) was the most common plant family, with 32 taxa collected. *Poaceae* (grass family) was second, with 20 taxa collected (Douglas et al. 1993). Seventeen plants listed as protected by the Arizona Native Plant Law (ANPL), ARS 3-901 *et seq.*, are found on Camp Navajo (see **Table 4**).

An installation-wide floral survey was completed in 1995 and updated in 2012 (NAU 2012; TRIES 1996). The surveys identified plants from 72 families, 261 genera, 405 species, and 493 subspecific taxa. Five non-native invasive species were found during the survey: field bindweed (*Convolvulus arvensis*), little hogweed (*Portulaca oleracea*), spotted knapweed (*Centaurea stoebe*), Dalmatian toad flax (*Linaria dalmatica*), and Scotch thistle (*Onopordum acanthium*). These plants are considered Prohibited, Regulated, and Restricted Noxious Weeds by the Arizona Department of Agriculture, and occupied areas may be controlled and quarantined to prevent further spread (State of Arizona Noxious Weed Regulations R3-4-244; Arizona Administrative Code R3-4-244). Ten species were considered undesirable by the NRM: sunflower (*Helianthus annuus*), common mullein (*Verbascum thapsus*), longflower rabbitbrush (*Chrysothamnus depressus*), Canada thistle (*Cirsium arvense*), common dandelion (*Taraxacum officinale*), Johnsongrass (*Sorghum halepense*), cheatgrass (*Bromus tectorum*), field brome (*Bromus arvensis*), redstem stork's bill (*Erodium cicutarium*), and salsify (*Tragopogon species*) (AZARNG 2012; TRIES 1996).

### 5.2.2.1 Dominant Forest Communities

Ten of the 14 vegetation communities found on Camp Navajo are classified as forest, with the dominant forest type being pure ponderosa pine. Other forest types include ponderosa pine–Gambel oak and mixed conifer, including areas dominated by Douglas fir and blue spruce (**Table 3**) (McHugh 1996).

The eastern section of the buffer area is a mixture of grasslands and ponderosa pine forest. Forest structure on the east side of the buffer area is mainly dense even-aged stands of ponderosa pine with few openings. Logged areas were seeded with grasses and legumes, and trees were allowed to regenerate naturally (NADA 1987a). The western and southwestern boundaries, excluding Volunteer Mountain and Volunteer Canyon, are dominated by ponderosa pine and Gambel oak. The southeast and east portions of the buffer area also contain dense areas of saplings and poles. Pre-commercial thinning and pulp and timber harvests have opened a few of the stands. The ASA chiefly contains a dense ponderosa pine community with some Gambel oak and small quaking aspen (*Populus tremuloides*) groves. Grass species include Arizona fescue (*Festuca arizonica*), blue grama (*Bouteloua gracilis*), Fendler threeawn (*Aristida purpurea*), and bottlebrush squirreltail (*Elymus elymoides*).

The ponderosa pine–Gambel oak mature forest (122.323 in Brown [1994] classification) on Camp Navajo is structurally diverse. Open areas in the forest exist naturally and from prior forest thinning and burning activities. Other areas are dense with ponderosa pine, Gambel oak, New Mexico locust (*Robinia neomexicana*), and white fir. Douglas fir and junipers (*Juniperus* spp.) are also present but are less abundant (Fulé et al. 1995; NAU 1996). Some areas in the buffer area contain open stands of ponderosa

pine, with Arizona fescue and mountain muhly (*Muhlenbergia montana*) as dominant understory species. Forest inventory that followed thinning procedures show a forest density similar to that during the historical surface fire regime, with 96 trees/acre and 75 square feet/acre (Stephens et al. 2013). This vegetative community (ponderosa pine-Gambel oak) is the most common on Camp Navajo, with many smaller forest communities also identified throughout the installation (McHugh 1996).

<b>Dominant Overstory Species</b>	<b>Dominant Understory Species</b>	<b>Overstory Associates</b>	<b>Understory Associates</b>
Douglas fir	Rocky Mountain snowberry	Gambel oak	Not Available (N/A)
Colorado blue spruce Ponderosa pine	N/A	N/A	N/A
Gambel oak New Mexico locust	N/A	ponderosa pine	N/A
Alligator juniper	N/A	Gambel oak ponderosa pine	Rocky Mountain snowberry
Ponderosa pine Gambel oak	N/A	alligator juniper	squirreltail mountain muhly
Ponderosa pine	Arizona fescue	N/A	N/A
Ponderosa pine	Arizona fescue	N/A	mountain muhly
Ponderosa pine	New Mexico locust	Gambel oak alligator juniper	White Mountain sedge squirreltail
Ponderosa pine	Arizona fescue	Utah juniper rocky mountain snowberry	blue grama mountain muhly
Arizona fescue	N/A	mountain muhly	N/A
Rabbitbrush	Arizona fescue	N/A	blue grama
Rabbitbrush	Arizona fescue	N/A	N/A
Ponderosa pine	New Mexico locust	N/A	N/A

### 5.2.2.2 Other Forest Communities

The north slope of Volunteer Mountain is dominated by Douglas fir (122.31 in Brown [1994] classification) with Gambel oak as the dominant overstory associate and Palmer's snowberry (*Symphoricarpos rotundifolius*) as the dominant understory associate species. Some white fir and subalpine fir are also present. This area contains stands of pine, spruce, and juniper with little to no evidence of previous forest thinning. Some areas are very dense as a result of fire suppression (NADA 1987a). The slopes of the canyon are dominated by mature blue spruce with an herbaceous understory, while more open aspects within the canyon have a mix of ponderosa pine with an herbaceous understory.

A mixed forest community of Gambel oak (123.32 in Brown [1994] classification) and New Mexico locust occurs on slopes with a west and northwest aspect on the west side of the installation. Scattered ponderosa pine occurs throughout, although pine is less abundant in this community than in other mixed forest types found on Camp Navajo. The upper and lower canopies are very thick, and few understory herbaceous species are present. On other west-facing slopes, pine and oak are the dominant tree species, with alligator juniper (*Juniperus deppeana*) interspersed. New Mexico locust is the dominant woody understory species, and White Mountain sedge (*Carex geophila*) and squirreltail are the dominant understory herbaceous species (McHugh 1996).

In drier forested areas, alligator juniper is the dominant overstory species, with a mixture of oak, ponderosa pine, and Rocky Mountain snowberry associates. These areas are more open, with scattered ground cover throughout (McHugh 1996).

### 5.2.2.3 Upland Grasslands

Grasslands and mountain meadows (141.41 in Brown [1994] classification) are also found on Camp Navajo. Grasslands are the second most common vegetation community and cover approximately 9,455 acres. Some of the grasslands are dominated by Arizona fescue with mountain muhly as a common associate. Other grasslands and meadows contain several fescue species, mountain muhly, pine dropseed (*Blepharoneuron thricholepis*), blue grama, western wheatgrass (*Pascopyrum smithii*), common wolfstail (*Lycurus phleoides*), and cheatgrass (*Bromus tectorum*) scattered with rabbitbrush (*Ericameria nauseosa*), legumes, and forbs (Horncastle et al. 2011; NADA 1987a).

### 5.2.2.4 Lowland Grasslands

Several areas identified in the Range and Training Land Assessment (RTLA) Program survey (CEMML 1997) were marshy meadows or marshy meadows dominated by grasses with scattered pine (242.4 in Brown [1994] classification). Non-grass species within these wet areas include aspen onion (*Allium bisceptrum*), shortspike watermilfoil (*Myriophyllum sibiricum*), Scouler's popcorn flower (*Plagiobothrys scouleri*), needleleaf navarretia (*Navarretia intertexta*), Mexican dock (*Rumex salicifolius*), Platte River cinquefoil (*Potentilla plattensis*), and several species of sedge.

### 5.2.2.5 Chaparral

Drier communities also are found within Camp Navajo. Chaparral (133.3 in Brown [1994] classification) are found on some south and west slopes on the west side of Camp Navajo. Alderleaf mountain

mahogany (*Cercocarpus montanus*), Mexican cliffrose (*Purshia mexicana*), Sonoran scrub oak (*Quercus turbinella*), and Fendler's ceanothus (*Ceanothus fendleri*) are common.

#### 5.2.2.6 Turf and Landscaped Areas

The only area on Camp Navajo that has been landscaped is within the Cantonment Area. A mixture of 60 percent Kentucky bluegrass (*Poa pratensis*) and 40 percent fescue (*Festuca* spp.) was used to establish and replant lawns on the installation. This mixture appears to be the best adapted for this area, providing a green lawn for the longest period (NADA 1987a). The earth-covered storage magazines (igloos) were planted with introduced grasses such as wheat grasses, perennial rye species, and orchardgrass (*Dactylis glomerata*). All future reseeding in other areas, on igloos and damaged areas, will be done with native vegetation.

#### 5.2.2.7 Wetland Plant Communities

As noted in Section 4.4.3, a delineation of wetlands and regulated waters that identified 100 acres of wetland and shallow water habitats on Camp Navajo was conducted in 2015. Eight plant species were identified: Western yarrow (*Achillea millefolium*), northern water plantain (*Alisma trivale*), pointed broom sedge (*Carex scoparia*), willowherb (*Epilobium brachycarum*), Rocky Mountain iris (*Iris missouriensis*), Mexican rush (*Juncus mexicanus*), seep monkeyflower (*Mimulus guttatus*), and little bluestem (*Schizachyrium scoparium*) (**Appendix D**).

### **5.3 AGRICULTURAL OUTLEASING**

There are currently no crops or horticulture on Camp Navajo; however, grazing has been permitted in the past. Livestock grazing is currently suspended.

#### **5.3.1 Grazing History**

Grazing was allowed on Camp Navajo from 1942 until 2002. Lessees were granted grazing privileges on the land from USFS. When the Army acquired the land, grazing privileges were retained. Between 1942 and 1961, sheep and cattle were grazed on the installation, and from 1962 to 1965, only sheep were grazed on the installation. Because 60 percent of the grazing land was overgrazed by 1965, the land was rested between 1966 and 1968. At that time, the United States Army Corps of Engineers (USACE) restricted sheep grazing on the installation to prevent overgrazing. On 15 May 1969, a 5-year grazing lease was established that allowed cattle grazing. In 1985, a second grazing lease was signed that allowed cattle grazing in each of the three grazing units. In 1991, a fence was constructed to prevent cattle from entering the PCPA (old OB/OD Area). The land was again rested from 1994 to 1996 while a grazing feasibility study was conducted. Cattle were re-introduced on the installation in 1998. All leases were approved by the USACE district engineer or their authorized representative, in accordance with Army Regulation (AR) 450-08. Grazing leases were under evaluation with assistance from AGFD to determine appropriate grazing levels. Grazing leases ran from 15 May to 15 October on 5-year leases that expired on 15 November 2002. Livestock grazing has not occurred on the installation since that time, and many of the grazing unit boundary fences have been removed. Initially, grazing leases were stopped to rest the land and have not been allowed since due to ecological and economic considerations.

## 5.4 FISH AND WILDLIFE

The AZARNG coordinates with a variety of other agencies and interested parties to identify and manage wildlife on Camp Navajo. Agencies and universities involved are USFWS, AGFD, USFS, ASLD, the University of Arizona, and NAU. Results of previous and ongoing studies will be used to manage wildlife on Camp Navajo in order to maintain the land for military training. The results from these studies allows the EMO to recommend management decisions regarding land use and training in a timely manner.

Significant progress has been made in identifying and inventorying non-game species on the installation. Installation-wide surveys have been conducted for mammals, birds, fish, amphibians, reptiles, insects, crustaceans, and mollusks (**Appendix D**).

Surveys for small mammals and birds were conducted on RTLA plots established in 1992. Additional surveys were conducted from 1995 to 1999 (TRIES 1996). Breeding bird surveys were conducted in the west buffer of Camp Navajo from 1996 to 1998. Songbird surveys have also been conducted by AGFD in 2006, 2008, and 2011 to 2013. Biennial MSO surveys are conducted throughout the installation by base biologists. Surveys for northern goshawks were conducted in 2000, 2004, and 2010 on portions of Camp Navajo (Ingraldi 2000; Nabel 2004; Lynn 2010). Bat surveys were conducted from 2004 to 2016 (Diamond 2016; Horncastle et al. 2007, 2009).

Prior to RTLA surveys, fauna inventory and monitoring were primarily for wildlife game species. The AGFD is responsible for the inventory and monitoring of game species in the state. Camp Navajo's NRM and other personnel assist AGFD in surveying wildlife populations on the installation. From inventory and monitoring efforts, the AGFD and the AZARNG have identified special habitat areas for game species, such as pronghorn and deer fawning grounds and elk calving grounds, on the installation.

### 5.4.1 Mammals

Mammals from 13 families, 24 genera, and 29 species inhabit Camp Navajo (**Appendix D**). Common forest species include squirrels (*Sciurus* spp., *Callospermophilus*, *Otospermophilus*, and *Tamiasciurus* spp.), chipmunk (*Neotamius cinereicollis*), brush mice (*Peromyscus boylii*), deer mice (*Peromyscus maniculatus*), Mexican woodrat (*Neotoma mexicana*), porcupine (*Erethizon dorsatum*), and several bat species, including myotis (*Myotis* spp.), pallid bat (*Antrozous pallidus*), big brown bat (*Eptesicus fuscus*), and the hoary bat (*Lasiurus cinereus*) (**Appendix D**).

Gunnison's prairie dogs (*Cynomys gunnisoni*) are common in the prairie areas. Prairie dog towns exist west of Railroad Tank and in the ASA. Other species found on the installation include Botta's pocket gopher (*Thomomys bottae*), desert cottontail rabbit (*Sylvilagus auduboni*), black-tailed jack rabbit (*Lepus californicus*), long-tailed weasel (*Mustela frenata*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), striped skunk (*Mephitis mephitis*), bobcat (*Lynx rufus*), and gray fox (*Urocyon cinereoargenteus*) (TRIES 1996).

Three species of tree squirrel were identified on Camp Navajo during RTLA surveys (TRIES 1996). Abert's squirrel (*Sciurus aberti*) is widely distributed throughout the ponderosa pine forest. The Arizona gray squirrel (*Sciurus arizonensis*) was noted as uncommon, observed only in old-growth ponderosa pine habitat above the ASO Tank #2 (**Appendix A, Figure 6**). The red squirrel (*Tamiasciurus hudsonicus*) is found in blue spruce (*Picea pungens*) trees in upper Volunteer Canyon, a habitat that typifies the species (Hoffmeister 1986). Squirrel densities within the western buffer of Camp Navajo were surveyed for in

2002 and 2003 (Bayless and Ingraldi 2006) and again in 2005, 2006, 2007, 2008, 2009, 2011, and 2012 (Gist et al. 2014).

Camp Navajo provides important habitat for woodpeckers and cavity-nesting birds and bats, which roost in snags. Snags on surrounding areas are often removed as firewood. The protection of snags provides a unique opportunity to maintain these birds and bats at a relatively high density, which can be beneficial to populations in surrounding areas as well as Camp Navajo.

#### 5.4.1.1 Bats

Bats in northern Arizona are generally found in ponderosa pine, ponderosa pine-oak forests, or riparian broadleaf forest areas. Snags provide important roosting habitat, and riparian areas, forest fragments, and meadows provide foraging habitat. Roosting habitat (snags and trees with peeling bark) are typically near a water source. Bats are opportunistic foragers, feeding on concentrations of insects and arthropods (e.g., moths, beetles, and other nocturnal, soft-bodied insects). Bat studies have been conducted primarily within the western portion of Camp Navajo, which is mainly comprised of ponderosa pine forest with Gambel oak and New Mexican locust understory. These studies were driven by three separate forest restoration treatments. Ten bat species have been captured on Camp Navajo, and an additional five species are known to occur within the vicinity of Camp Navajo (AGFD 2018; Horncastle et al. 2007, 2009).

Studies from 2005 to 2016 (Diamond 2016; Horncastle et al. 2007, 2009) found that common species such as the big brown bat and occult little brown responded positively to timber management practices, the combined thin and burn method being the most effective. This positive response only lasted for six years, as use continually declined before equaling deferred treatment levels. Burning treatments had a lag affect, with spikes in occurrence observed four years following treatment. Our long-term study suggested that timber management practices have a dynamic impact to tree roosting bat ecology, with observable impacts that vary by species and time since forest treatment (Diamond 2016).

#### 5.4.1.2 Big Game

Camp Navajo is used seasonally by a number of different big game species such as elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), pronghorn, and Merriam's turkey. Maintaining suitable travel corridors is essential for population viability.

In the past, elk, deer, and pronghorn populations were usually higher on the installation than surrounding forested lands. These higher populations were attributed to reduced hunting pressure on the installation and the movement of game from the Sycamore Canyon wilderness area onto the installation via Volunteer Canyon (NADA 1987b). Elk, pronghorn, and deer use Camp Navajo during the spring, summer, and fall (and minimally in the winter depending on snowfall). Habitat for these species is in good condition on the installation.

Hunting pressure has increased on the installation in general to keep game species at sustainable levels. The ASA (**Appendix A, Figure 2**) on Camp Navajo experiences less hunting pressure than other areas of the installation. The PCPA is closed to hunting due to safety concerns.

##### 5.4.1.2.1 Elk



During the warm seasons, elk are found in the coniferous forests and mountain meadows of the buffer area, ASA, and PCPA. Western sections of the buffer area containing Gambel oak may serve as calving grounds (Luedeker 1997). Summer population counts, usually conducted in August, estimate 700 to 1,000 elk on the installation. A smaller number stay and use the lower woodlands, mixed conifer forest, and grassland as winter range. The preferred foods of elk are grasses, sedges, and aspen. They also use many of the understory shrub species such as serviceberry (*Amelanchier* spp.), rabbitbrush spp., Rocky snowberry spp., and several other species (Hoffmeister 1986).

Elk show both daily and seasonal movements and tend to leave Camp Navajo when snow cover is moderate to heavy. Major game trails are found running north and south of the Volunteer Mountain. An east-west movement of elk off and onto the installation occurs in the southeast buffer area adjoining Rogers Lake and a north-south movement at Metz Tank up through the Cantonment Area (Loeser and Sisk 2005). The outer perimeter fence has 30 elk crossings that allow movement between the Kaibab and Coconino national forests and Camp Navajo. Many elk travel from the Sycamore Wilderness area north through Volunteer Canyon into the forested buffer area (NADA 1987b).

#### 5.4.1.2.2 *Mule Deer*

Mule deer occur throughout the installation. In the pine forest, they feed on shrubs and some grasses and sedges. They prefer to forage on small shrubs and herbaceous plants depending on the season and frequent the PCPA to feed on the abundant grasses and browse species. Most of the population stays on Camp Navajo year-round.

#### 5.4.1.2.3 *Pronghorn*

Pronghorn are located throughout Camp Navajo's open areas from April to October. Female pronghorn are on Camp Navajo during the fawning period (1 April to 15 June). A movement study conducted on Camp Navajo indicated that pronghorn move among openings on or near Garland Prairie, Camp Navajo, and Rogers Lake. Pronghorn are migratory and make numerous movements between Camp Navajo and adjoining areas to lower elevations when weather, primarily snow, prompts movement (Waddell et al. 2005). AGFD GPS monitoring results of pronghorn movements from Camp Navajo suggested they are moving through several access corridors.

#### 5.4.1.2.4 *Merriam's Turkey*

In Arizona, Merriam's turkey are typically associated with ponderosa pine forests adjacent to montane meadows. Merriam's turkey prefer un-grazed meadows and mature, unlogged stands of pine and oak with forbs and grass cover. The mixed-forb grass understory or meadows containing Arizona fescue, mountain muhly, wild bromes, and pine dropseed are important for survival of young (Brown 1989).

Merriam's turkey are found throughout Camp Navajo. The ponderosa pine/Gambel oak forests provide suitable turkey habitat. Pines are used as roosting habitat, and foraging areas tend to have higher basal area of Gambel oak. Gambel oak acorns and alligator juniper berries are an important food source for turkeys during early and late winter (Wakeling and Rogers 1995). Meadows, drainages, and stream sides are used by hens and poult. Toms prefer foraging throughout the forest.

An essential component of turkey habitat in Arizona is water. In the summer, turkeys are normally found at watering areas in the early morning or late afternoon. By fall, when water is scarce, they are found closer to a water source and will visit these areas at midday (Brown 1989).

In summer, the sexes normally remain separate. Hens and poultts inhabit meadows and streamsides. They feed on greens and insects such as grasshoppers, crickets, stoneflies, and leaf beetles. Males feed on pine seed and forbs throughout the forest. When water becomes scarce in the fall, turkeys will stay near any major source. Turkey will stay in the pine areas until heavy snowfall, then retreat to the lower elevations, where they feed on juniper berries, grass seeds, pinyon pine seeds, and other available food sources (Brown 1989). Camp Navajo contains the necessary components for prime warm-season turkey habitat.

#### 5.4.1.2.5 *Other Large Game Mammals*

Other large game mammals found on Camp Navajo include black bear (*Ursus americanus*) and mountain lion (*Puma concolor*). Camp Navajo has an abundance of prey species for mountain lion, which chiefly include deer, pronghorn, rabbit, porcupine, and javelina (*Pecari tajacu*). A population of javelina is known to inhabit Sycamore Canyon and may eventually move north up Volunteer Canyon.

### 5.4.2 **Birds**

See **Appendix D** for a detailed list of bird species that occur on Camp Navajo (TRIES 1996). RTLA surveys identified seven species of woodpecker (Family *Picidae*), two hummingbirds (Family *Trochilidae*), and 56 passerines (Order *Passeriformes*), most of which use woodland areas. Breeding bird inventories in the northwest portion of the buffer area documented 53 breeding passerine bird species within ponderosa pine habitat (Lesh and Rosenstock 1999). Passerine bird densities within the western buffer of Camp Navajo were surveyed from May to July in 2008 to 2015 (Frary et al. 2009; Gwinn et al. 2015). Shorebirds are common at the earthen water tanks throughout the installation; over 20 species have been identified (TRIES 1996). Many species that require grasslands, brushy areas, and open woodlands also occur on Camp Navajo.

From 2000 to 2003, annual winter raptor surveys were conducted in 8 square miles along the northern boundary to establish a benchmark for long-term monitoring on the installation (Bayless and Ingraldi 2005). Since 2010, EMO NRMs began conducting these surveys annually from November to March, expanding the route to encompass additional areas on the installation.

Although Camp Navajo does not support large wetlands, many species of waterfowl (Family *Anatidae*) use the installation during migration. Atherton Lake in the ASA is used by waterfowl when water is present. Waterfowl also use Ponds 1, 2, and 3 and many of the earthen water tanks. Seventeen species of duck and two species of goose have been identified on the installation since 1993 (AZARNG 1993; TRIES 1996). The meadow and spring restoration projects are expected to have minimal effects on these bird species, as work is planned outside the breeding season.

### 5.4.3 **Fish**

There are no permanent streams or lakes on Camp Navajo, and no native fish species in the existing aquatic environments. Recreational fishing, when made available, is provided by stocking Pond 1 in the ASA with rainbow trout (*Oncorhynchus mykiss*). In the past, Pond 1 was stocked with brown trout,

(*Salmo trutta*), grass carp (*Ctenopharyngodon Idella*), and smallmouth bass (*Miropteris dolomieu*). Catfish (*Ictalurus* spp.), green sunfish (*Lepomis cyanellus*), and bluegill (*Lepomis macrochirus*) have been caught in Pond 1 but were not officially stocked. It is not known if all these species currently inhabit Pond 1.

Ponds 2 and 3 are concrete-lined structures that were stocked in the past but are now closed to recreational fishing. Pond 3 was stocked with smallmouth bass and channel catfish (*Ictalurus punctatus*) in 1987. In the fall of 1995, both ponds were closed to fishing because they were close to a sensitive military area. No future stocking will occur in Pond 2 and 3, which will be maintained as back-up reservoirs.

Johnson Tank and Quarry Tank are remnants of cattle tanks and quarry activity and have been stocked with fish in the past. Johnson Tank is located in the northwestern quadrant of the installation near the Small Arms Range Complex (**Appendix A, Figure 6**). Quarry Tank is in the ASA, below Atherton Lake (**Appendix A, Figure 6**). Largemouth bass (*Micropterus salmoides*) were added to both tanks in 1994. In 1995, fathead minnows (*Pimephales promelas*) were added to Johnson Tank as a food source for the bass. These areas are no longer stocked or open to fishing.

During the 1995 RTLA survey, largemouth bass were collected from both tanks and a fathead minnow was collected from Johnson Tank. Shiners (*Notropis* spp.) were collected from the rifle range tanks, and cutthroat trout (*Oncorhynchus clarki*) were found in Ponds 1 and 2 (TRIES 1996).

#### 5.4.4 Amphibians and Reptiles

Field surveys for reptiles and amphibians were not conducted on Camp Navajo until the RTLA surveys in 1995. The RTLA surveys identified four amphibian species and five reptile species. The non-native American bullfrog (*Rana catesbeiana*) has also been observed within Camp Navajo but was not encountered during these surveys. In 2006, AGFD conducted amphibian surveys from 24 April to 17 August 2006 at 41 water sources on the Camp Navajo (Wilcox and Partridge 2007). Additionally, a planning-level survey was completed in 2016 and 2017 using trap arrays, visual encounter surveys, and acoustic monitoring. Reptiles encountered on Camp Navajo during the most recent planning-level surveys include plateau fence lizards (*Sceloporus tristichus*), terrestrial gartersnakes (*Thamnophis elegans*), many-lined skinks ([*Eumeces*] *Plestiodon multivirgatus*), greater short-horned lizards (*Phrynosoma hernandesi*), and ornate tree lizards (*Urosaurus ornatus*). The amphibians encountered included barred tiger salamander (*Ambystoma mavortium*), Arizona treefrog (*Hyla wrightorum*), western chorus frog (*Pseudacris triseriata*), and Mexican spadefoot (*Spea multiplicata*). An Arizona toad (*Anaxyrus microscaphus*) was found during RTLA surveys in 1994 on a bank of Volunteer Canyon. It had been dislodged from the soil by animal traffic (TRIES 1996; Wilcox and Partridge 2007). The Arizona toad is a Tier 1 species of greatest conservation need (SGCN) (AGFD 2012). The Arizona toad was not located during the most recent herpetofauna surveys on Camp Navajo. These surveys were completed in 2017 throughout the installation, including Volunteer Canyon. For a complete list of herpetofauna found on Camp Navajo see **Appendix D**.

#### 5.4.5 Invertebrates

Over 236 invertebrate species have been identified on Camp Navajo (**Appendix D**). Surveys identified four species of springtails (Order *Collembola*), six species of dragonflies and damselflies (Order

*Odonata*), 11 grasshoppers and cricket species (Order *Orthoptera*), 14 species of true bugs (Order *Hemiptera*), and 14 species of cicada, hopper, aphid, and scale (Order *Homoptera*). Forty-one species of beetles (Order *Coleoptera*) were identified, along with 36 species of flies (Order *Diptera*) and 65 species of moths, skippers, and butterflies (Order *Lepidoptera*). Twenty-three species of wasps, hornets, bees, and ants (Order *Hymenoptera*) were also identified. The other 22 species found are in other various orders (**Appendix D**). Over 100 of these species were found in Volunteer Canyon. Various tanks around the installation also provide suitable habitat for many invertebrates. Several invertebrate species inhabit the entire installation and are not limited to a particular habitat type (NAU 1996).

Four mollusk groups and one crustacean species were identified during RTLA surveys (**Appendix D**). Mollusks included eared pond snails (*Radix Auricularia* and *Stagnicola* spp.), orb snails, and pouch snails. An additional inventory was conducted in 2012 at Tappen Springs, Elsie Springs, and Pipe Springs; no new mollusks or crustaceans were found. Only the marsh pond snails are native to the area. Camp Navajo and AGFD cooperatively introduced crayfish (*Orconectes virilis*) into Ponds 1, 2, and 3 to control aquatic vegetation and restocked them as needed through 1987. Crayfish were also stocked in Elsie and Tappen springs in 1990 to control aquatic vegetation. The project was successful in Pond 1 but less effective in both springs. Crayfish are no longer stocked in any ponds or spring areas within Camp Navajo. Mollusks and crustaceans are an important food source for shorebirds and waterfowl.

## 5.5 SPECIAL STATUS SPECIES

Special status species include federally Listed Threatened, Listed Endangered, and SC, as well as state SGCN, and protected state plant species. Also included are eagles protected by the Bald and Golden Eagle Protection Act (BGEPA). Federal and state special status species known to occur on or near Camp Navajo are discussed in more detail below and listed in **Table 4**.

Threatened and endangered species are federally protected plants and animals that are in danger of becoming extinct without protection. These species may be rare because of specialized habitat needs, habitat modification, or habitat destruction. The Federal ESA of 1973 protects listed species against killing, harming, harassment, or any action that may damage their habitat.

The National Defense Authorization Act (NDAA) of 2004 made a significant revision to the ESA of 1973: “The Secretary [of the Interior] shall not designate as critical habitat any lands or other geographical areas owned or controlled by the DoD, or designated for its use, that are subject to an INRMP prepared under Section 101 of the SAIA (16 USC 670 (a) *et seq.*), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.” Hence, under the 2004 NDAA, a military installation may have its INRMP remove the need for critical habitat designation if the INRMP provides a benefit to listed species and manages for the long-term conservation of the species. However, at the time of the designation of MSO critical habitat in 2004, there was not a qualified INRMP in place at Camp Navajo.

The State of Arizona does not have an ESA for plants or animals and therefore, abides by federal listings. However, the AGFD identifies elements of concern in Arizona and consolidates information about their status and distribution via the state’s Natural Heritage Program: “An element of concern can be, but is not limited to, an animal or plant with special status at the federal, Tribal, or state level, or a specific habitat necessary for its survival” (AGFD 2012).

<b>TABLE 4 SPECIAL STATUS SPECIES DOCUMENTED ON OR WITHIN 5 MILES OF CAMP NAVAJO, BELLEMONT, ARIZONA</b>			
<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Status<sup>1</sup></b>	<b>State Status<sup>2</sup></b>
<i>Accipiter gentilis</i>	Northern goshawk	SC	SGCN
<i>Agave utahensis</i> var. <i>utahensis</i>	Utah agave		SR
<i>Allium bisceptrum</i> var. <i>palmeri</i>	Aspen onion		SR
<i>Allium cernuum</i> var. <i>obtusum</i>	Nodding onion		SR
<i>Allium geyeri</i> var. <i>geyeri</i>	Geyer's onion		SR
<i>Anaxyrus microscaphus</i>	Arizona toad	SC	SGCN
<i>Aquila chrysaetos</i>	Golden eagle	BGEPA	SGCN
<i>Aquilegia chrysantha</i>	Golden columbine		SR
<i>Aquilegia desertorum</i>	Desert columbine <sup>3</sup>		SR
<i>Buteo regalis</i>	Ferruginous hawk	SC	SGCN
<i>Calochortus nuttallii</i>	Sego lily		SR
<i>Clematis hirsutissima</i>	Arizona clematis	SC	HS
<i>Cynomys gunnisoni</i>	Gunnison's prairie dog	SC	SGCN
<i>Echeandia flavescens</i>	Torrey's craglily		SR
<i>Echinocereus triglochidiatus</i> var. <i>melanacanthus</i>	Kingcup cactus		SR
<i>Falco peregrinus</i>	American peregrine falcon	SC	SGCN
<i>Haliaeetus leucocephalus</i>	Bald eagle	SC, BGEPA	SGCN
<i>Hedeoma diffusa</i>	Flagstaff false pennyroyal <sup>3</sup>		SR
<i>Idionycteris phyllotis</i>	Allen's big-eared bat	SC	SGCN
<i>Lithobates pipiens</i>	Northern leopard frog		SGCN
<i>Maianthemum racemosum</i>	Western Solomon's seal		SR
<i>Maianthemum stellatum</i>	Starry false Solomon's seal		SR
<i>Microtus mexicanus</i>	Navajo Mexican vole		SGCN
<i>Myotis evotis</i>	Long-eared myotis	SC	SGCN
<i>Myotis occultus</i>	Occult little brown	SC	SGCN
<i>Myotis thysanodes</i>	Fringed myotis	SC	
<i>Myotis Volans</i>	Long-legged myotis	SC	
<i>Nyctinomops macrotis</i>	Big free-tailed bat <sup>3</sup>	SC	
<i>Opuntia macrorhiza</i> var. <i>pottsii</i>	Twistpine prickly pear		SR
<i>Phacelia serrata</i>	Cinder phacelia <sup>3</sup>	SC	
<i>Pheneranthus validulus</i>	Tusayan flameflower <sup>3</sup>	SC	SR
<i>Prosartes trachycarpum</i>	Roughfruit fairybells		SR

<b>TABLE 4</b>			
<b>SPECIAL STATUS SPECIES DOCUMENTED ON OR WITHIN 5 MILES OF CAMP NAVAJO, BELLEMONT, ARIZONA</b>			
<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Status<sup>1</sup></b>	<b>State Status<sup>2</sup></b>
<i>Strix occidentalis lucida</i>	Mexican spotted owl	LT	SGCN
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat <sup>3</sup>		SGCN
<i>Zigadenus elegans</i>	Mountain death camas		SR

<sup>1</sup> Federal Status Definitions:

- LT Listed Threatened.** Species protected under the ESA as being in imminent jeopardy of becoming endangered.
- SC Species of Concern.** The terms “Species of Concern” or “Species at Risk” should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the USFWS, but neither term has official status (generally all former C2 species).
- BGEPA Bald and Golden Eagle Protection Act.** Eagles are federally protected under this Federal Act.

<sup>2</sup> State Status Definitions:

- SGCN Species of Greatest Conservation Need.** Species that the AGFD identified as most in need of conservation actions in the state.
- HS Highly Safeguarded.** Arizona native plants whose prospects for survival in Arizona are at risk, as described by the ANPL. Included are those species of native plants and parts of plants, including the seeds and fruit, whose prospects for survival in this state are in jeopardy or which are in danger of extinction throughout all or a significant portion of their ranges and those native plants which are likely within the foreseeable future to become jeopardized or in danger of extinction throughout all or a significant portion of their ranges. Collection is only allowed with a permit.
- SR Salvage Restricted.** Arizona native plants whose prospects for survival in Arizona are at risk, as described by the ANPL. Included are those native plants which are not included in the HS category but are nevertheless subject to a high potential for damage by theft or vandalism. Collection is only allowed with a permit.

<sup>3</sup> Within species range, but never recorded on the installation

Sources: HEG 2001, 2005a, and 2005b; Springer et al. 2011; AGFD 2018

### 5.5.1 Federal Special Status Species (Fauna)

#### 5.5.1.1 Mexican Spotted Owl (LT, SGCN)

This INRMP is intended to provide a benefit to the MSO and its critical habitat. Actions that result in a benefit to the MSO and its habitat are addressed in this plan. In the future, this INRMP may be used to obtain an exemption from any proposed re-designation of critical habitat for the MSO or critical habitat designation for other species on Camp Navajo per Section 101 of the SAIA.

Due to alteration and fragmentation of their habitat and the threat of high-severity and stand-replacing forest fires to old growth forest, MSO have experienced declines across their occurrence range. In response to these declines in MSO populations, the species was federally listed as threatened throughout its range on 16 March 1993 (USFWS 1993). The most recent critical-habitat designation for the species was published on 31 August 2004 (USFWS 2004). The MSO recovery plan, which outlines steps to recover the species, was approved in 1995 and updated and reapproved 2012 (USFWS 1995a, 2012). The 2012 recovery plan recommended that land managers work to reduce the primary threat to the species: catastrophic wildfire.

The recovery plan identifies five Ecological Management Units (EMUs) based mainly on recognized physiographic provinces and biotic regimes within the species range. Camp Navajo is within the Upper Gila Management Zone (UGM) EMU, which is primarily on the Upper Gila Mountain Forest Province (Bailey 1995) but also includes the southern end of the Colorado Plateau Ecoregion. This UGM includes the largest concentration of MSO in Arizona (Ward et al. 1995).

In addition to critical habitat, other types of important MSO habitat are Protected Activity Centers (PACs) and recovery habitat. A PAC is delineated around known owl sites. A PAC is a minimum of 600 acres (243 hectares) that includes the best nesting and roosting (i.e., resting) habitat in the area. Within each PAC, the USFWS recommends that land managers delineate a 100-acre “activity center” around the nest/roost grove(s) used during the breeding season. Recovery habitat provides additional areas appropriate for nesting, roosting, foraging, dispersal, and other life history needs. Recovery habitats include unoccupied areas in mixed-conifer, pine-oak, and riparian forests and/or rocky canyons.

Currently there are four designated PACs on Camp Navajo. The Volunteer Canyon PAC (No. 040211) was established just south of Camp Navajo by the Coconino National Forest in 1997 in accordance with recovery plan guidelines (USFWS 1995b). Designated critical habitat associated with the Volunteer Canyon PAC includes 2,037 acres within the southern portion of Camp Navajo (**Appendix A, Figure 10**). The critical habitat extends south of Camp Navajo and is part of the UGM EMU.

In 2003 the Volunteer Canyon PAC was modified in response to data provided from Coconino National Forest and the AZARNG survey data. In 2018, the Volunteer Canyon PAC was split into the Blue Spruce PAC (Camp Navajo) and the Volunteer Canyon PAC (Coconino National Forest). The split occurred in response to confirmation of two separate MSO pairs, one located on Camp Navajo and the other on Coconino National Forest. The Blue Spruce PAC boundary currently extends onto Coconino National Forest (**Appendix A, Figure 10**) and is managed cooperatively between the Coconino National Forest, NGB, and the AZARNG. The 2012 surveys identified a pair of MSO on Volunteer Mountain, resulting in a 600-acre PAC designation. In 2014, a pair was located in the east buffer and the Tappen Springs PAC was designated. Finally, in 2016, a pair was located south of Volunteer Mountain and the Jeep Trail PAC was designated (**Appendix A, Figure 10**).

#### 5.5.1.3 Golden Eagle (BGEPA, SGCN)

The golden eagle is protected under the BGEPA and categorized by the AGFD as an SGCN. Golden eagles are normally found in open country, especially in hilly and mountainous regions. In Arizona they nest on rock ledges, cliffs, or in large trees at elevations between 4,000 to 10,000 feet (AGFD 2002).

Golden eagles are known to be present on Camp Navajo, although they are found infrequently and in low numbers. They are normally identified during the annual winter raptor surveys.

#### 5.5.1.4 Northern Goshawk (SC, SGCN)

The northern goshawk is listed by the USFWS as an SC, by the AGFD as an SGCN, and by the USFS as a sensitive species. The northern goshawk in Arizona is most commonly found in ponderosa pine forests along the Mogollon Rim, on the Kaibab Plateau, and in the southeastern mountains (AGFD 2003a).

Northern goshawks occasionally breed in oak forests at elevations as low as 4,900 feet in the southeastern portion of the state (Glinski 1998).

Northern goshawks generally forage in the lower portions of the canopy zone of forests that have high canopy cover. Birds are their primary prey, but mammals are also eaten. Northern goshawks commonly take prey as large as band-tailed pigeons and cottontails (AGFD 2003a).

The AGFD conducted a northern goshawk inventory according to the USFS Southwestern Region's northern goshawk inventory protocol (Joy et al. 1994; Kennedy and Stahlecker 1991) of approximately 4,900 acres of forested areas within Camp Navajo in 2000 (Ingraldi 2000). The AGFD located one active historical nesting territory along the western boundary on the installation near Volunteer Mountain, and two male northern goshawk nestlings were banded. One northern goshawk nesting territory was documented on the installation's southern boundary in the designated critical habitat for the MSO. The proximity of the nest to the Coconino National Forest/Camp Navajo boundary suggests the range of this nesting pair likely includes lands under jurisdiction by both the AZARNG and the USFS.

During surveys in July 2005, a juvenile responded to broadcast begging calls, and an active nest was located approximately 655 feet west of the installation boundary in the Kaibab National Forest (Nabel 2005). Surveys were conducted in 2010 and 2011 at historical nest sites, Post-fledging Family Areas (PFA), and nearby potential habitat. No northern goshawks were detected within historical nest sites, PFAs, or within the western portion of the installation. An adult male goshawk was detected in 2010 within the ponderosa pine forest along the eastern portion of the installation.

#### 5.5.1.5 Ferruginous Hawk (SC, SGCN)

The ferruginous hawk is found primarily at elevations of 3,500 to 6,000 feet. In Arizona, they use open scrublands, woodlands, grasslands, agricultural lands, and semi-desert grassland in the northern and southeastern parts of the state. Breeding populations are found in northern Arizona on the Colorado Plateau (AGFD 2003a). They select similar areas during winter. Hunting areas are typically open grasslands, preferably those dotted with suitable low hills or short trees, which serve as perches (Hall et al. 1988). The ferruginous hawk is listed by the USFWS as an SC, by the AGFD as an SGCN, and by the USFS as a sensitive species. This species has been recorded on Camp Navajo during winter raptor surveys in the open grasslands (AZARNG 2011).

#### 5.5.1.6 American Peregrine Falcon (SC, SGCN)

The American peregrine falcon is found near steep cliffs that support sufficient prey. In urban settings, they choose to roost high up on tall buildings where abundant food is present (e.g., pigeons and doves). Prey items also occasionally include bats. Arizona's peregrines are being found in areas that would have formerly been considered marginal, suggesting that populations may have reached levels saturating the



optimal habitat available, and new breeding pairs are forced to breed in sub-optimal areas (AGFD 2003a). The American peregrine falcon is listed by the USFWS as an SC and by the AGFD as an SGCN and has been recorded at Camp Navajo during winter months (AZARNG 2011).

#### 5.5.1.7 Arizona Toad (SC, SGCN)

The Arizona toad is found in primarily in east and west central Arizona with populations in canyons and flood plains near the Mogollon Rim. Habitat includes rocky streams and canyons in pine-oak forest types. The Arizona toad is a USFWS SC and an AGFD SGCN. A single individual was recorded in Volunteer Canyon (TRIES 1996) in 2004. Planning-level surveys for herpetofauna were completed in 2017 on Camp Navajo, including in Volunteer Canyon. This species was not found during those surveys.

#### 5.5.1.8 Mexican Vole (SGCN)

The Mexican vole (*Microtus mexicanus*) is found in dense thickets of a variety of shrubs that provide cover, high litter, and bare ground as well as in dry, grassy areas adjacent to ponderosa pine forests at elevations from 3,800 to 9,700 feet (AGFD 2003b). Reproductive activities occur throughout most of the year, but peak breeding occurs from May through October (AGFD 2003b). The Mexican vole is categorized by the AGFD as an SGCN. This species occurs at Camp Navajo (TRIES 1996).

#### 5.5.1.9 Gunnison's Prairie Dog (SC, SGCN)

Gunnison's prairie dogs are found in open grasslands and shrub lands at elevations from 6,000 to 12,000 feet. Gunnison's prairie dogs are considered a keystone species because they create habitat, provide food, and help keep the soil and plant communities healthy. Gunnison's prairie dogs are categorized by the USFWS as an SC and by the AGFD as an SGCN. This species occurs at Camp Navajo (TRIES 1996), and established colonies are found within the PCPA, ASA, and small arms range complex.

#### 5.5.1.10 Allen's Big-Eared Bat (SC, SGCN)

Allen's big-eared bat (*Idonycteris phyllotis*) is found most often in ponderosa pine, pinyon-juniper, Mexican woodland, and riparian areas with sycamores (*Platanus* spp.), cottonwoods (*Populus* spp.), and willows (*Salix* spp.) from 1,320 to 9,800 feet (AGFD 2001). Allen's big-eared bats are often found along streams or over ponds where they may seek insects, water, or both. Allen's big-eared bats feed primarily on soft-bodied insects, with small moths being their primary food. Prey is gleaned from surfaces or pursued and taken in flight (AGFD 2001). They have been known to roost in caves, abandoned mine shafts, near cliffs, lava tubes, and under tree bark of large ponderosa pine snags (AGFD 2011a–e; Hoffmeister 1986; Rabe et al. 1999). This species is known to occur on Camp Navajo.

#### 5.5.1.11 Long-eared Myotis (SC, SGCN)

The long-eared myotis (*Myotis evotis*) is found in coniferous forests along the Kaibab Plateau, Mogollon Plateau, and Chiricahua Mountains. They have been known to roost in hollow trees; behind loose slabs of bark; among the timbers of an unused railroad trestle; and in caves, mines, fissures in cliffs, abandoned buildings, and sink holes. This species usually roosts in caves during cold weather (AGFD 2011b). Long-eared myotis typically feed on moths and other soft-bodied insects.

#### 5.5.1.12 Occult Little Brown (SC, SGCN)

The occult little brown (*Myotis occultus*) is found at elevations from 6,000 to 9,200 feet in ponderosa pine and oak-pine woodlands near water. They also may be found along permanent water or in riparian forests in some desert areas (AGFD 2011c). Colonies of these bats have been found in buildings, in crevices, and between timbers of highway bridges (AGFD 2011c). The occult little brown generally forages over water and eats flying insects, including mosquitoes and midges. These bats generally roost near a water source (Hoffmeister 1986).

#### 5.5.1.13 Fringed Myotis (SC)

The preferred habitat of the fringed myotis (*Myotis thysanodes*) is oak woodland/ponderosa pine/pinyon-juniper vegetation at elevations from 4,000 to 8,437 feet, from which they forage in a variety of other habitats from chaparral to ponderosa pine forests (Hoffmeister 1986). Fringed myotis tend to roost in the open in tightly packed groups within buildings and also have been found in caves, mine tunnels, rock crevices, and ponderosa pine and Douglas fir snags (AGFD 2011d). Reproducing females have been found roosting in ponderosa pine and Douglas fir snags within the Coconino National Forest (Rabe et al. 1999). Fringed myotis eat mostly beetles, but moths also are taken.

#### 5.5.1.14 Long-legged Myotis (SC)

The long-legged myotis (*Myotis volans*) is found in conifer forests from elevations of 6,000 to 10,000 feet, but it also uses riparian and desert habitats (AGFD 2011e). The long-legged myotis is active most of the night, and it commonly forages 10 to 15 feet over water and in openings in woods. It most often consumes moths but also takes flies, termites, lacewings, wasps, small beetles, and other insects (AGFD 2011e). This species utilizes a variety of roosts, including abandoned buildings, cracks in the ground, crevices in cliff faces, and spaces behind exfoliating tree bark. Caves and mine tunnels are used as hibernacula (AGFD 2011e).

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## SECTION 6 MISSION IMPACTS ON NATURAL RESOURCES

### 6.1 CURRENT AREAS OF IMPACT

The existing conditions of Camp Navajo serve as the basis to evaluate potential environmental impacts from future mission training. Affected environments that warrant analysis include cultural, biological, geological, soil, surface water and groundwater, air quality, solid, hazardous and special wastes, noise, and public health and safety. As Camp Navajo is primarily a training and munition storage facility, natural resource management of the installation focuses on increasing the diversity of habitats for training and mitigating the risk of catastrophic events that may cause interruptions to trainings or munition storage. Therefore, management has and will continue to focus on tailoring the installation in beneficial ways to accomplish these goals. The paragraphs to follow describe how the current management of Camp Navajo's natural resources is shaped by the needs and operations of Camp Navajo and detail some of the impacts associated with this need.

#### 6.1.1 Geology and Soils

##### 6.1.1.1 Geology/Mineral Resources

Geological materials are currently used to generate roads and buildings in Camp Navajo. Cinders and limestone have been mined and used as building materials. One limestone pit (~ 10 acres) and one cinder pit (~12 acres) are located in the ASA. One cinder pit (~30 acres) is located within the western buffer area. Material from the cinder pits are mainly used for road maintenance.

##### 6.1.1.2 Soils

Seventeen soil units were identified on Camp Navajo (**Appendix A, Figure 5**). Soils have been subject to compaction and erosion in the highly disturbed portions of Camp Navajo. Soils associated with live fire ranges may have been contaminated with lead from ammunition. The DoD utilizes the Operational Range Assessment Program to monitor soil contaminants, including sub-surface migration. Range closure protocols at Camp Navajo are in accordance with the Military Munitions Response Program. This program provides remediation resources and stipulates collaboration with ADEQ for potential soil contaminants, in situ or migratory, within a given range's footprint or surface danger zone (Wilkinson 2013).

#### 6.1.2 Water Resources

Currently there have been minimal effects to Camp Navajo's water resources, and water resources are minimally managed to avoid impacts other than through the implementation of general best management practices (BMPs) such as check dams and spill management plans around the installation.

Several ephemeral streams, natural springs, and wetlands are found on Camp Navajo (**Appendix A, Figure 6**). As these areas have the potential to be protected under the CWA (see Section 4.4.3) and contain unique plants and habitat for wildlife (see Section 7.5), many are identified and protected from disturbance when possible. Specifically, Pond 1, Johnson Tank, and Atherton Lake are maintained for fish and waterfowl habitat. To limit contamination to these ecologically important resources, which is most likely to come from vehicles and equipment used for training and road maintenance, Camp Navajo follows the spill prevention and control procedures detailed in the Camp Navajo Spill Prevention Control

and Countermeasure Plan (SPCCP) (AZARNG 2019) as required by the Title 40 Code of Federal Regulations (CFR) §112.

### **6.1.3 Biological Resources**

Camp Navajo takes a variety of steps to minimize impacts on biological resources while supporting the INRMP. Particularly, certain regions around the installation are targeted for management or avoided in order to best facilitate ecological resiliency and Camp Navajo's mission. This scientifically informed and targeted management of Camp Navajo land serves the installation in two ways: 1) targeted treatment allows for better enhancement of the ecosystem health and 2) creating a variety of habitats better facilitates its ability to provide more diverse training opportunities for troops.

#### 6.1.3.1 Vegetation

The AZARNG identified four significant vegetation communities within Camp Navajo. Management of these communities aims to maintain and improve the sustainability and biological diversity of terrestrial ecosystems while supporting sustainable economies, human use, and the environment required for realistic military training. The four significant vegetation communities on the installation are forested stands, meadows/grasslands, Volunteer Canyon, and Volunteer Mountain. The forested stands in the east and west buffer areas are managed for training, wildlife habitat, and forest restoration. Natural resource management for the meadows/grasslands in the buffer areas is focused on training and wildlife habitat. The Volunteer Canyon and Volunteer Mountain are managed for wildlife habitat.

Camp Navajo's forest restoration treatments (mechanical thinning and prescribed burns) occurred primarily in the west buffer (2005 to 2020) but will expand to the ASA and east buffer in the future. These treatments are targeted to reduce stand density, reduce ladder fuels, increase canopy gaps, and restore historical frequent but low-intensity fire regimes. The meadows/grasslands area is set to be restored in future projects, primarily through prescribed burns and seeding of native vegetation. NRMs will coordinate with training operations to minimize any conflicts.

Disturbances to these vegetation communities have typically come from bivouac sites, road improvements, and training maneuvers, which increase the potential for the establishment and spread of invasive and noxious weed species. Invasive plants act as aggressive colonizers where native vegetation has been disturbed or displaced, resulting in a loss of plant diversity. If noxious weeds are found, control and eradication measures will be implemented as outlined in the IPMP (AZARNG 2013a). Mitigation measures will be implemented when needed to decrease the loss of vegetation, especially areas with sensitive plant species (see Section 5.5).

#### 6.1.3.2 Wildlife

Camp Navajo has conducted a variety of surveys and studies on the effects of their operations and management strategies on wildlife. Though minimal restrictions are present to limit operations in regards to the studied species (such as tree roosting bats, tassel-eared squirrels, and Gunnison's prairie dog), research has resulted in the implementation of BMPs to reduce the effects on wildlife when possible and thus, minimize the overall effect of training and management practices on the ecosystems. The implementation of mitigation measures to reduce harm to wildlife usually involve avoiding select areas, protecting individual resources, and installing certain features that do not regularly alter troop mission training.

Fencing around Camp Navajo is one example of Camp Navajo's efforts to simultaneously address mission needs and wildlife management. Camp Navajo needs fences for safety and security purposes. Fences restrict the movement of larger mammals such as elk, deer, and pronghorn and can lead to animals getting trapped. To reduce the impact of these fences on wildlife migration patterns, numerous elk jumps have been installed in the outer perimeter on the east, south, and west sides of the installation. Wildlife-friendly fences are installed when repairing or replacing existing fences. Elk and deer attempt to cross the railroad tracks and I-40 highway north of the installation. Fences in this area have no wildlife crossings because of potential security threats from this heavily traveled installation boundary.

### 6.1.3.3 Special Status Species

Camp Navajo avoids disturbances to MSO PACs during breeding season (**Appendix F**). When possible, Camp Navajo has also set up restrictions to operations near the roosts and nests of migratory birds and bald eagles to minimize harm and comply with federal laws. These specific restrictions are discussed further in Section 7.

Eleven special status species known to occur in the vicinity of Camp Navajo (**Table 3**) were identified by AGFD and USFWS databases. Additional information on plant and wildlife SC is found in *Section 5.5 Special Status Species*.

## **6.2 POTENTIAL FUTURE IMPACTS**

Based on Camp Navajo's previous utilization of its natural resources and its management plans, this section discusses the potential environmental impacts of future missions on local and regional natural areas and threatened and endangered species habitat. Future impacts include projected changes in missions, BRAC activities, and activities outlined in the AZARNG Camp Navajo Vision Plan (2017).

### **6.2.1 Soils**

Travel on military roads/trails, troop movement, and use of staging areas and bivouac sites are part of the military mission at Camp Navajo. These activities could result in increased soil damage and vegetation loss as operations expand in addition to natural soil losses from rainfall, runoff, and wind erosion. Roads are the largest source of soil erosion on the installation while most of the installation's future plans outlined in the AZARNG Camp Navajo Vision Plan (2017) include road improvements and expansions. Maintenance of existing roads/trails associated with mechanical thinning operations is expected to improve drainage features and reduce soil erosion. Soil may also become contaminated from unintended, accidental, or uncontrolled releases of chemicals used for pest management, vehicles, and/or mechanical equipment. BMPs, as detailed in the IPMP and Camp Navajo SPCCP, are currently being used to mitigate releases to the environment (AZARNG 2019). Lead will continue to accumulate and contaminate soils within firing ranges.

BMPs for soil and water conservation are routinely incorporated into site-specific project plans, including forest and grassland treatments. Project-specific BMPs are developed from a variety of sources, including the USFS and Arizona Department of Transportation, which identify standard practices (ADOT 2012; USDA 4FRI 2010). Specific BMPs used by the installation can be found in **Appendix J**.

### 6.2.2 Water Resources

Future water contamination on the installation is most likely to occur from soil erosion or from chemicals used in pest control or vehicles and mechanical equipment. Accumulation of polluted stormwater or sewage water and point-source and non-point-source pollutants may threaten water tables and potable water sources.

Water resources have potential to be impacted from the forest thinning and burning operations due to the increase of erosion during forest operations; however, over the long term these operations would have a positive effect on water resources as well as overall ecosystem health by reducing the potential for catastrophic wildfires.

Camp Navajo is in an arid region with a growing human population; well construction and groundwater pumping both on and off the installation may reduce the quantity of Camp Navajo's groundwater resources. The numerous BMPs that the installation implements to reduce effects on water resources will help minimize some of these issues.

### 6.2.3 Biological Resources

Current and future operations focus on adapting the Camp Navajo biological environment in a way that maximizes troop usability while promoting environmental sustainability. The main driver behind most of these actions is the need to minimize catastrophic wildland fire impacts on Camp Navajo operations. Current and future projects (addressed in **Appendix E**, **Appendix F**, and **Appendix G**) are intended to decrease overall wildland fire risk and thus, minimize interruptions to Camp Navajo operations. Per the USFS's definition, forest treatments, or mechanical treatments, involve "reducing the amount of vegetation which has built up to dangerous levels, or changing the arrangement of these fuels in the environment." Forest treatments such as mechanical thinning and prescribed burning will continue to be used to accomplish this goal, targeting areas that are commonly used for training (such as the west buffer area) and have high forest densities. Overall, fire behavior models run in conjunction with the Proposed Action estimate an 88 percent decrease in predicted active crown fire, a 41 percent decrease in passive fire, and a 23 percent increase in surface fire (Horncastle et al. 2011). Treating these areas is anticipated to decrease large-scale fire in the area and increase forest resiliency and stability, protecting the environmental and human usages of Camp Navajo. Restoration of meadows/grassland areas on the property will be used to create open spaces for troop maneuvering while also restoring historic tree patterns. The proposed forest treatments will help facilitate Camp Navajo's goals of providing a varied training ground while increasing forest resiliency and function. Treated areas would experience temporary reductions in herbaceous ground cover resulting from disturbance associated with mechanical harvesting equipment and burning operations on 18,652 acres. Disturbances from forest treatments would have the indirect impact of increasing the potential for the establishment and spread of invasive and noxious weed species. BMPs would be implemented to reduce the level of temporary disturbance. As **Appendix F** describes, burning and thinning operations will be implemented after detailed burn plans are developed; thus, future treatments can likely be coordinated around training and installation needs.

Military training and construction activities may affect biological resources through displacement, the movement of wildlife away from a habitat. As training and construction activities occur only intermittently on Camp Navajo, short-term impacts to wildlife are likely minimal. Wildlife typically move

back into disturbed areas shortly after training ceases, and thus, training activities appear to cause little or no long-term impact to wildlife (NADA 1987b). Other unfavorable effects from military use include noise disturbance from vehicular and aircraft use, weapon discharge during training activities, and troop movement. Noise disturbance likely has the greatest effect during the spring, the bird breeding season and the calving season for elk and pronghorn.

#### **6.2.4 Air Quality**

Generation of air pollution may occur through wind erosion, ground disturbance, exhaust from vehicles, off-road machinery, internal combustion engines, demolition/renovations, facility equipment, and smoke emissions (Particulate Matter less than 2.5 microns in diameter [PM<sub>2.5</sub>]) from prescribed fires. Additional dust, PM<sub>2.5</sub>, and chemical emissions occur from the detonation of ordinance and arms fire. Generation of PM<sub>2.5</sub> pollutants from wildfire (on-site and off-site) is both unpredictable and likely to affect Camp Navajo in the future.

### **6.3 NATURAL RESOURCES NEEDED TO SUPPORT THE MILITARY MISSION**

Realistic training lands and sustainable, functional ecosystems are essential to the military mission. The 17,000-acre training-area portion of Camp Navajo contains a variety of flora and climatic conditions that mimic many natural field conditions that may be found upon troop deployment. The components needed to maintain the functional military training landscape are defined on many levels. Like all biological organisms, troops need clean drinking water, clean air, food, and shelter. Soldiers require training lands to support proficiency and living quarters free from risk of chemical and radiation contamination and dangerous pests and disease.

Natural structural diversity is essential to offer the full array of training, from open areas for vehicle and troop maneuvers and firing ranges to areas of dense vegetation for concealment. Stable soils are needed to keep dust to a minimum during maneuvers as well as to maintain the integrity of roads and trails used to transport troops and equipment across the installation. Degraded ecosystems may lose their functionality and result in a loss of training realism. Degradation of ecosystems conflicts with the military's commitment to the "no net loss in the capability of training lands to support the military mission" policy. The future of Camp Navajo and its military mission depend on maintaining functional ecosystems.

Per Camp Navajo's 2017 Vision Plan, the installation's infrastructure needs are not expected to change excessively in a way that would require severe alteration of its natural resources. Most future expansion and improvements are slated around enhancement of the Cantonment Area, the most developed area, with select other improvements around the site, of particular note being road enhancements around Camp Navajo to facilitate travel to training sites. Two new training facilities are proposed for the southeast quadrant of the installation: an infantry squad battle course and a multi-purpose machine gun facility, both of which would involve live firing. The location of both facilities is anticipated to be outside the MSO PACs and other notable natural constraints and, per the 2013 Noise Operational Management Plan, likely would not lead to a significant increase in disruptive noise at the installation.



## **6.4 NATURAL RESOURCE CONSTRAINTS TO MISSIONS AND PLANNING**

### **6.4.1 Special Status Species**

There are both spatial and temporal constraints to the future military mission planning due to special status plant and animal species being present on the installation (**Appendix A, Figure 14**) (Sections 7.3.1 and 7.3.2). In most cases it is easier and more cost-effective to limit the use of special areas to minimize damage or disturbance than to mitigate damage; thus, Camp Navajo trends toward avoiding areas of special consideration.

Regions such as Volunteer Canyon, Volunteer Mountain, the wildlife migration corridor along the eastern boundary (**Appendix A, Figure 14**), and special areas such as meadows, ephemeral streams, natural springs, and wetlands provide a variety of benefits to the ecosystems of Camp Navajo; therefore, Camp Navajo follows specific restrictions in their usage. More details on the current restrictions to their access can be found in Section 7, though Camp Navajo overall attempts to limit disturbance to these regions as much as possible.

As detailed in AZARNG Camp Navajo's 2017 Master Plan, these areas of biological importance and other resource constraints such as waterways are mapped out and were considered in the development and choosing of where future projects can occur.

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## SECTION 7 NATURAL RESOURCES PROGRAM MANAGEMENT

### 7.1 NATURAL RESOURCES PROGRAM MANAGEMENT

Camp Navajo implements a variety of management strategies and techniques to protect and manage its natural resources in compliance with regulations and keeping in line with the installation's mission. Camp Navajo conducts wildlife surveys and studies to inform management and subsequent mitigation measures and BMPs. These efforts help the installation protect and utilize their natural resources. A summary of Camp Navajo's management plans and strategies ranging from Integrated Training Area Management (ITAM), wildlife management, fire management, forest management, and endangered species management strategies can be found in the sections below.

#### 7.1.1 Integrated Training Area Management

The ITAM Program is one of two core programs in the Army's Sustainable Range Program (SRP) under the direction of the Headquarters Department of the Army Military Operations Training Simulation Division. ITAM was designed to achieve optimum, sustainable use of training by implementing a uniform land management program to ensure no net loss of training capabilities. Program proponentcy for ITAM within the NGB resides with the Army Training Division. Program support is provided by the ARNG-I&E and the NGB Army Installations Division. The POTO is the proponent for ITAM at the headquarters of the AZARNG. ITAM personnel prepare the Range Complex Master Plan (RCMP), which depicts an installation's current range and training land assets, general siting of future range complex project requirements, and requirements and constraints that may impact ranges and training lands. It also describes restrictions to training, shortfalls of training land, throughput capacity, funding, and infrastructure downrange. The purpose of the RCMP is to guide the actions of ITAM in support of the military mission. The RCMP is reviewed annually and requires input from other organizations as well as the EMO. ITAM is responsible for repairing any damage done to natural resources through training and for all vegetation management required to support training. ITAM will continue to coordinate with the EMO on natural resource projects associated with the RCMP in order to maintain training areas and to protect sensitive areas. The ITAM project matrix is found in **Appendix L**.

### 7.2 WILDLIFE MANAGEMENT AND THEIR HABITATS

The goal of wildlife management within Camp Navajo is to conserve and protect wildlife while supporting the multiple uses of the training installation. The wildlife management program will ensure that the management of wildlife populations and their habitats are consistent with acceptable scientific principals and in compliance with the ESA and other applicable laws and regulations. Wildlife management includes habitat improvement projects (i.e., forest thinning, prescribed burning, and meadow restoration), habitat protection, special status species surveys, research on effects of human disturbance on special status species, and population trends (**Appendix A, Figure 14 and Figure 15**).

The AZARNG will focus on an ecosystem management approach for special status species at Camp Navajo. Management of these species will be proactive in preserving and maintaining populations. Maintaining a functional ecosystem will decrease the chances that these species and others will be become threatened or endangered from within their natural habitat ranges.

### 7.2.1 Vegetation Community Map

Vegetation community maps are one of the tools used by NRMs to maintain, protect, and improve environmental quality, aesthetic values, and ecological relationships while supporting military missions on installations. The AZARNG has developed a forest inventory map (**Appendix E**) of Camp Navajo based on aerial photo interpretations along with ground-truthing of plant communities. The forest inventory was completed installation wide. The map is used for mission siting, wildlife management, and forest management throughout the installation and is updated as needed.

### 7.2.2 Native Plants

No single floristic survey is likely to produce a comprehensive list of species currently found within Camp Navajo and therefore, continued floristic surveys will provide a method to periodically update the plant species known or suspected to occur within Camp Navajo. Site-specific floral surveys will continue as needed and populations of state protected native plants (see **Table 1**) will be recorded using a GPS unit for accurate locations to aid management of known populations. Plant species documented on Camp Navajo are listed in **Appendix D**.

### 7.2.3 Fish and Wildlife Management Program

Camp Navajo contains the necessary habitat components to maintain wildlife diversity and abundance. Present management guidelines will maintain habitat diversity for the many species of wildlife found on the installation. Ongoing research projects will provide real-time information to assist the AZARNG in managing special areas and the species that inhabit them. When sensitive species are identified, management requirements will be reviewed and modified as necessary to protect species and their habitats while meeting critical military mission needs.

#### 7.2.3.1 Mammals

A variety of small mammals occur throughout Camp Navajo. The process of identifying special areas used by small mammals within the installation, and avoiding disturbance or causing minimum disturbance, will maintain the integrity of these habitats. Following habitat management guidelines, such as maintaining understory vegetation and woody debris, will maintain small mammal habitat.

In spring 2004, the AZARNG and AGFD began research on the influence of forest restoration treatments on tree-roosting bat communities. The research was completed in the western portion of the installation where two different forest restoration treatments occurred. Artificial bat roosts were placed within two forest treatment areas and in one untreated area. Bats were mist-netted at roost sites and near earthen water tanks or water sources. Bat species were captured, marked, and identified (Horncastle et al. 2005). Information gathered from this research is used to determine bat species diversity and abundance before and after forest treatments. Data also has been used to determine preferred roost areas and foraging habitat within the installation. Ongoing monitoring will occur when funding is available to determine the effects of the forest treatments on bats.

The AZARNG and AGFD also researched the effects of forest restoration on the Abert squirrel, a key species of the ponderosa pine ecosystem. This research determined the abundance (population density) of Abert squirrels within forest restoration treatments and compared their abundance between restored and unrestored forest areas. Squirrel counts began in 2002 to 2003 and were continued from 2006 to 2010 (Bayless and Ingraldi 2006).

In 2002 the AZARNG funded a base-wide mapping survey of the Gunnison's prairie dog colonies of Camp Navajo conducted by NAU. Between 2003 and 2006, the AZARNG funded research that investigated Gunnison's prairie dog behavior and colony expansions or contractions. Results from this study concluded the Gunnison's prairie dog behavior is not negatively affected by the use of current firing ranges and/or other disturbances (i.e., construction) (Drickamer and Martz 2006). In 2013 the AZARNG NRM located and surveyed the Gunnison's prairie dog colonies on Camp Navajo. The survey information from 2013 was used to relocate the prairie dog population at the firing range using methods approved by the Humane Society of the United States.

#### 7.2.3.2 Bat Species

Bat species will be monitored to protect them from human disturbance and maintain suitable foraging habitat under present forest management guidelines. Forest treatment plans at Camp Navajo will incorporate management recommendations taken from Rabe (1997) as long as management is not in direct conflict with forest management recommendations or conservation measures for the MSO (**Appendix A, Figure 14**). Two primary management strategies for protecting roosting habitat are:

1. Preserve all large snags with exfoliating bark; and
2. Ensure proper forest management to provide sufficient numbers of roost sites for future use.

#### 7.2.3.3 Game Management

Habitat for these species is in good condition on the installation. Volunteer Canyon will be maintained as a wildlife area to ensure a safe travel corridor (**Appendix A, Figure 14**); other wildlife corridors on and around Camp Navajo include areas along the eastern boundary, southern boundary, and the western buffer area.

Ground surveys for big game (elk, deer, and pronghorn) are conducted with wildlife managers from AGFD and Camp Navajo NRM biennially prior to the opening of hunting season. Population trend estimates and recommendations for the following year's hunt are made from these counts. When possible, ARNG helicopters provide support for these aerial surveys on the installation when available, which also provides tactical training for AZARNG pilots. Additional monitoring surveys will be conducted as needed and when equipment and personnel are available.

Fencing is being upgraded around the perimeter of the installation and ASA. Fencing can be very restrictive to the migration and movement of elk, pronghorn, and deer. To help alleviate this problem, the current perimeter fence contains approximately 33 elk crossings. Additional wildlife crossing areas will be identified and may be upgraded to wildlife friendly fencing using the AGFD fencing guidelines when security allows.

##### *7.2.3.3.1 Hunting Program*

Camp Navajo currently has a hunting and fishing program operated through the Department of Army's (DA's) Morale Welfare and Recreation as well as the Conservation Reimbursable and Fee Collection Programs Fish and Wildlife Conservation Fund (21X5095). Restrictions based on population trend estimates and mission training are placed on the numbers of hunting permits and hunters allowed to hunt on the installation. The training mission takes precedence over hunting. Hunting areas are subject

to closure during times of training. This process can prevent hunting from being used to its full potential as a management tool in controlling game animal populations.

The AGFD and AZARNG at Camp Navajo will meet on an annual basis to agree upon harvest objectives, permit numbers, season dates, weapon types, and allocation of permits/access for elk, pronghorn, mule deer, and turkey.

Camp Navajo lies within state Game Management Unit 6B. Camp Navajo hunting permits are offered in four categories: DoD Military (defined as current or honorably retired uniformed military service members), Wounded Warrior (defined as recipients of the Purple Heart or enrollees in the military's Wounded Warrior Program), Disabled Veteran (defined as persons with 50 percent or greater service-connected disability, as certified by the Veteran's Administration), and Other (all eligible applicants including non-military and military personnel).

In order to hunt on the installation, individuals must apply for and receive a hunting permit for Camp Navajo through the AGFD, show proof of the completion of a hunter safety course, sign a waiver of liability, and receive a required safety and environmental awareness brief. The majority of hunting on the facility is for the following species: elk, pronghorn (archery only), mule deer (archery only), and turkey. Mountain lion hunting will be allowed for authorized hunters while actively hunting for other big game. Rifle and muzzleloader hunting is allowed within the buffer area, and archery-only hunting is allowed within ASA. No hunting is allowed in the PCPA. Because the installation is an ammunition storage depot, only current or honorably retired uniformed military service members are authorized to hunt within the ASA boundary. Updated hunting policies, hunting restrictions, dates, and tag numbers can be found online (<https://dema.az.gov/army-national-guard/camp-navajo/garrison-operations/camp-navajo-hunting-information>). Conservation fees will continue to be collected in accordance with AR 200-1. These fees are used for protection, conservation, and management of fish and wildlife, including habitat improvement and related activities in accordance with Section 101 of the SAIA.

#### *7.2.3.3.2 Pronghorn Harvest*

Based on aerial surveys, approximately 30 pronghorn forage on Camp Navajo. Pronghorn (bucks only) hunting has occurred on the installation since 1994. Pronghorn spend the majority of their time in the ASA on Camp Navajo; therefore, only current or honorably retired uniformed military service members are authorized to hunt pronghorn.

#### *7.2.3.3.3 Mule Deer Harvest*

Archery hunting for mule deer has been allowed since 1994. There have been no mule deer rifle hunts on Camp Navajo since 2002. Hunting opportunity for mule deer is typically offered as archery only with an over-the-counter, non-permit deer tag. Demand for this hunting opportunity on Camp Navajo has been low. To the extent that access must be limited for archery mule deer hunting, access is allocated to the following categories: Military, Wounded Warrior, Disabled Veteran, and Other. If the demand for this hunting opportunity remains low, the AGFD and Camp Navajo may, through mutual agreement, allocate access to the various classifications of hunters such that it matches demand for the opportunity.

#### *7.2.3.3.4 Elk Harvest*

There is a large elk population on the installation. Approximately 700 to 1,000 animals use habitat on Camp Navajo and only leave to go below the snow line when forage is no longer available. The elk population size has remained constant over time and appears to be within the carrying capacity for the installation. The current hunt structure features several stratifications for legal animals, including “Any Elk” and “Antlerless Elk” seasons for general, muzzleloader, and archery-only weapon types. The strategy currently emphasizes harvest of the female portion of the population. A Disabled Veteran elk hunt was initiated in 1995. Archery has a regular season, and a late season was added in 1996. A muzzleloader season on bull elk was added in 1997. Tags are allocated among the following categories of hunters: Military, Wounded Warrior, Disabled Veteran, and Other. The majority of tags are allocated to military categories of hunters. An average of 75 elk per year were harvested from 2009 to 2018.

#### *7.2.3.3.5 Turkey Harvest*

The spring hunt is preferred by hunters, but it interferes with military training. Hunters are advised that hunts may be severely restricted or entirely prevented by training activities. Fall archery hunts for turkey have been allowed since 1996. Spring shotgun shooting shot tags and fall archery-only tags are allocated among the following categories of hunters: Military, Wounded Warrior, Disabled Veteran, and Other. The majority of tags are allocated to military categories of hunters. Hunting opportunity for fall turkey is typically offered archery-only with an over-the-counter, non-permit tag. Demand for this hunt opportunity on Camp Navajo has typically been low. If demand for this hunt opportunity remains low, the AGFD and Camp Navajo may, through mutual agreement, allocate access to the various classifications of hunters such that it matches demand for the opportunity.

#### *7.2.3.3.6 Small Game Harvest*

Small game species hunted on the installation include Abert’s squirrel, Arizona gray squirrel, red squirrel, and desert cottontail. Hunting pressure is minimal for these species.

#### 7.2.3.4 Fisheries Management

The fishing program is administered and operated through DA's Morale Welfare and Recreation. Pond 1 is periodically stocked with rainbow trout. AGFD issues a stocking permit, and the fish are tested for various parasites and viruses by the supplier according to the Arizona Department of Agriculture and AGFD standards. Once a satisfactory certificate of analysis is received and approved, the fish are allowed to be stocked. Because these fish are purchased with funds generated by the Morale, Welfare, and Recreation funds, a state fishing license is not required to fish on the installation.

Due to its location within the ASA, fishing access at Pond 1 is subject to closure at any time if in conflict with the military mission. Access is controlled on the installation, and records are kept of those entering and exiting the installation for fishing. Fishermen are required to fill out a survey, and creel surveys are conducted on each individual fisherman prior to leaving the facility. Information gathered includes number of people fishing, hours fished, and the number of fish caught. Information from the net sampling and creel surveys is used to set stocking rates.

#### 7.2.3.5 Amphibians and Reptiles

Though past management guidelines have not addressed reptiles and amphibians specifically, resource managers recognize the importance of including these species in management requirements. Beginning

in 2006, all water impoundments on Camp Navajo and a surrounding 1-mile area were surveyed for amphibians and for the presence of undesirable non-native or non-endemic aquatic species, such as crayfish or non-native fish. Several amphibian and reptile species are found in and near earthen water tanks maintained by installation personnel. Johnson and Quarry Tanks, the Rifle Range Tanks, "L" Tank, and Elsie Springs provide habitat for tiger salamander, treefrog, and midland chorus frog. The western terrestrial garter snake and regal horned lizard were also found around water bodies. The dead and downed woody debris found throughout the forested areas provides habitat for reptiles such as the many-lined skink (TRIES 1996).

Management guidelines for the MSO and northern goshawk also ensures sufficient dead and downed woody debris remains throughout forested areas for the benefit of reptiles. The AZARNG will maintain a portion of earthen water tanks on Camp Navajo to manage for amphibians. There are no plans within the next five years for spring development. If it is decided that springs are to be developed, NEPA documentation addressing affects to amphibians and reptiles will be completed. Restoration activities are planned for areas such as Tappen Springs, Pipe Springs, Metz Tank, Mickle Tank, and Pyrotechnic Tank. Restoration activities include returning areas and hydrology to natural conditions. Additionally, vegetation control will be limited or avoided around water bodies (see **Appendix J** for general BMPs that will be implemented).

#### 7.2.3.6 Pest Species Management

The IPMP for the AZARNG outlines the pest species management activities performed by and for the AZARNG (AZARNG 2013b).

#### 7.2.3.7 Federally Protected Species

To ensure continued habitat conservation and biodiversity for these raptors and compliance with DoD directive, management guidelines from the USFWS and AGFD were reviewed and incorporated into the INRMP. Management recommendations for the bald eagle were compiled from the AGFD document *Conservation Assessment and Strategy for the Bald Eagle in Arizona* (AGFD 2006).

##### *7.2.3.7.1 Bald Eagle*

Wintering bald eagles have been found within Camp Navajo, but no nesting has been observed. Potential bald eagle nesting and wintering sites have been monitored annually for use during winter raptor surveys. The AZARNG, in cooperation with AGFD, reviews potential research projects related to habitat use and nesting activities within Camp Navajo.

To ensure that continuing activities on Camp Navajo do not jeopardize bald eagle use of the installation, management guidelines from *Conservation Assessment and Strategy for the Bald Eagle in Arizona* (AGFD 2006) will be followed. A summary of the guidelines can be found in the following paragraphs. These include guidelines for:

- Initiating standardized surveys;
- Establishing an Integrated Sighting Reporting System;
- Procedures following discovery of New Breeding Areas (NBAs);
- Managing NBAs; and
- Managing winter roosts.



**a. Establish Standardized Surveys**

The Southwestern Bald Eagle Management Committee (SWBEMC) directs surveys and monitoring of bald eagle nests as well as winter counts of bald eagles. The Camp Navajo NRM has coordinated with SWBEMC to establish standardized winter survey routes within the installation. Wintering bald eagle counts are conducted and coordinated with the statewide effort. Information on eagle numbers, age classes, and habitats discovered on Camp Navajo is recorded and reported to SWBEMC.

**b. Guidelines Following Discovery of New Breeding Areas**

There are currently no known breeding nests at Camp Navajo. If NBAs or alternate nests are discovered, the following measures to ensure protection of the breeding cycle will be implemented by the NRM:

1. Contact USFWS biologists to ensure all management requirements are followed.
2. Notify other primary cooperators (SWBEMC and AGFD) of the discovery.
3. Enter the location into AGFD's Heritage Data Management System.
4. Investigate the NBA on the ground to examine potential conflicts with current land use.

**c. Management of New Breeding Areas**

Three buffer zones will be established around all known nests to protect breeding attempts from adverse effects of human activities. Any activity in these zones will be stopped if a negative impact to a breeding pair becomes apparent. If an NBA is located near existing recreation centers, roads, or occupied buildings, the primary cooperators will modify the following guidelines to best manage the area.

1. Zone 1 is a 500-foot radius around a nest where breeding eagles are most sensitive to human activity and the greatest degree of protection is needed. During the breeding season (1 December to 30 June), no activity will occur in this zone. During the non-breeding season, no landscape-altering activities (e.g., building construction, timber harvesting) will occur. Low impact activities of a short duration (such as fence building) may be permitted.
2. Zone 2 is a 500- to 1,000-foot radius around a nest. During the breeding season, only brief activities (e.g., driving or walking through) will be permitted in this zone. During the non-breeding season, no landscape-altering activities will occur. Low impact activities of a short duration may be permitted. Furthermore, between 15 August and 30 November, maintenance activities (e.g., selective thinning of timber stands or repairs to existing buildings and roads) may be permitted.
3. Zone 3 is a 1,000- to 2,500-foot radius around a nest. In this area, limited activity can occur year-round. During the breeding season, low impact activities of a short duration (e.g., fence building) may be permitted. During the non-breeding season, no landscape-altering activities will occur in this zone. Maintenance activities (such as selective thinning of timber stands or repairs to existing buildings and roads) may be permitted. Most other activities may be permitted during this time, provided they do not directly or permanently impact known bald eagle perching, roosting, or foraging sites.

**d. Management of Winter Roosts**

Management guidelines for wintering habitat are difficult because the species winters statewide. Thus, identification, protection, maintenance, and recruitment of roost trees are essential. Dargan (1991) described the characteristics of winter roost trees in Coconino National Forest as large (mean diameter at breast height of 28.3 inches and 93 feet tall), in loose groups (5- to 40-acre stand size, mature clumps of 5 to 10 trees per acre), on a 5- to 10-percent slope with a 50- to 80-percent canopy closure, and within 1 mile of a food source. Winter roosts have been identified on Camp Navajo and will be protected when possible. Road building will be minimized, and activities causing disturbance to roosting bald eagles will be avoided when possible from 15 October to 15 April. Silvicultural treatments to promote growth of large roost trees within this zone will be encouraged.

#### 7.2.3.7.2 *Migratory and Breeding Birds*

There is nationwide concern over declining numbers of neotropical bird populations. Many neotropical birds migrate through northern Arizona and are protected under the Migratory Bird Treaty Act (MBTA). The MBTA prohibits illegal take, possession, sale, transport, and shipment of any part of migratory birds or their nest.

Incidental taking of migratory birds is regulated in 50 CFR 21, Migratory Bird Permits. Part 21.15, Authorization of Take Incidental to Military Readiness Activities, effective 28 February 2007, allows incidental take by DoD in the course of military readiness activities under certain conditions specified in Paragraph (a) Take Authorization and Monitoring:

*“Except to the extent authorization is withdrawn or suspended pursuant to paragraph (b) of this section, the Armed Forces may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces must confer and cooperate with the Service to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects.*

*When conservation measures implemented under paragraph (a)(1) of this section require monitoring, the Armed Forces must retain records of any monitoring data for five years from the date the Armed Forces commence their action. During INRMP reviews, the Armed Forces will also report to the Service migratory bird conservation measures implemented and the effectiveness of the conservation measures in avoiding, minimizing, or mitigating take of migratory birds.”*

It is DoD policy to promote and support a partnership role in protection and conservation of migratory birds and their habitat by protecting vital habitat, enhancing biodiversity, and maintaining healthy and productive natural systems on DoD lands consistent with the military mission. The Partners in Flight (PIF) Program is a network of organizations involved in bird conservation, of which DoD's bird conservation program is a vital part. DoD works with the National Fish and Wildlife Foundation to develop cooperative programs and projects with other federal, state, and non-governmental organizations.

Several research projects have been conducted on Camp Navajo that helped to identify management guidelines for bird species. Most focused on analyzing the connection of bird species to the ponderosa pine forest ecosystem and the effect of forest treatments on bird species survival in this environment.

The results of these projects enable the AZARNG to set management guidelines to protect bird habitat. The NRMs at Camp Navajo have established a working relationship with PIF to further management

efforts for birds on the installation. All neotropical migratory bird and winter raptor surveys on Camp Navajo are conducted according to PIF criteria.

Winter raptor surveys have been conducted by AZARNG staff from 2010 to the present and will continue on an annual basis. Results from this research will be used to evaluate the effects of ongoing and future projects on sensitive raptor species. Overall, Camp Navajo will follow the BMPs for wildlife management detailed in **Appendix J** of this document. Nest surveys and winter raptor surveys will also continue throughout the installation when possible.

### **7.3 MANAGEMENT OF THREATENED AND ENDANGERED SPECIES AND HABITATS**

#### **7.3.1 Native Plants**

The USFWS SC include three native plants documented within 5 miles of Camp Navajo (**Table 4**), none of which are known to occur on the installation. Of the three, the Tusayan flame flower is also listed as a SR under the ANPL. Suitable habitat for this species occurs on the installation, and such areas will be mapped and surveyed when funding is available. If populations are found, they will be monitored and protected from disturbance.

#### **7.3.2 Threatened and Endangered Species**

The AZARNG recognizes that actions included in this INRMP may affect candidate, listed, or other protected species (e.g., migratory birds, bald eagles, and golden eagles). The AZARNG will work with the USFWS prior to implementation of any action that may affect these species or their habitats.

##### 7.3.2.1 Mexican Spotted Owl

One federally threatened species, the MSO, occurs within Camp Navajo. The AZARNG will continue to consult with both USFWS and AGFD to minimize the impacts of ongoing and future actions to this species. Surveys for MSO were conducted in 1997, 1998, 2000 to 2004, and biennially starting in 2006. Camp Navajo has 2,037 acres of designated critical habitat and 4 PACs contained within the installations. Management guidelines require minimal disturbance within the PAC during the MSO breeding season from 1 March through 31 August. The AZARNG will ensure that management guidelines for critical habitat and PACs established by the USFWS will be followed. The AZARNG will continue to implement the reasonable and prudent measures found in both the 2005 and 2015 BO (**Appendix H**).

##### *7.3.2.1.1 Protected Activity Centers*

PACs encompass a minimum of 600 acres surrounding known owl nest/roost sites and include high quality owl habitat. The following outlines some of the measures used by NRM to reduce disturbance near PACs. More detailed and general BMPs for Camp Navajo can be found in **Appendix J**.

- All activities are coordinated with the USFWS office.
- No mechanical or prescribed fire treatments occur within PACs or Nest/Roost Core Areas during breeding season unless non-breeding is inferred or confirmed that year per the accepted protocol.
- Removal of hardwoods, downed woody debris, snags, or other key habitat variables only occur when compatible with owl habitat management objectives and documented through reasoned analysis.

- Road or trail maintenance, repair, and building in PACs or Nest/Roost Core Areas will continue to be undertaken during the non-breeding season (1 September to 28 February) to minimize disturbance to owls unless non-breeding is inferred or confirmed or the AZARG demonstrates using acoustic monitoring that noise disturbance is less than 90 A-weighted decibels and consults with the USFWS.
- Light burning of surface and low-lying fuels may be allowed following careful review by a biologist and fuel management specialist. These burns will be done during non-breeding season.
- If mechanical treatments are needed to reduce fire risk to owl nest/roost habitats and may enhance owl habitat, the 2012 Recovery Plan will be used to guide those treatments.
- If a stand-replacing fire occurs within a PAC, timber salvage plans will be evaluated in coordination with the USFWS on a case-specific basis.
- Limit human activity and noise disturbance in PACs and Nest/Roost Core Areas during the breeding season (1 March to 31 August), unless AZARG can demonstrate using acoustic monitoring that noise disturbance is less than 90 A-weighted decibels and consult with the USFWS.
- All required permits will be obtained from the USFWS for any research projects as well as surveys and monitoring of the PACs and Nest/Roost Core Areas.

#### 7.3.2.1.2 *Recovery Habitat*

Recovery habitat is primarily ponderosa pine-Gambel oak, mixed-conifer, and riparian forest that either currently is, or has the potential for becoming, nest/roost habitat or does/could provide foraging, dispersal, or wintering habitats.

##### Recovery Nest/Roost Habitat:

- Areas will continue to be managed for nest/roost replacement habitat.
- Stands will continue to not be treated in such a way as to lower stand conditions below thresholds in the 2012 Recovery Plan.
- Prescriptions will continue to be written to retain key owl habitat elements (e.g., large trees, snags, large logs, and hardwoods).

##### Recovery Foraging/Non-breeding Habitat:

- Emphasize large hardwoods, where appropriate.
- Retain key owl habitat elements (e.g., large trees, large snags, large logs, and hardwoods).
- Minimize tree removal.

When activities conducted in conformance the above MSO habitat management standards and guidelines may adversely affect other threatened, endangered, or sensitive species or may conflict with other established recovery plans or conservation agreements, the AZARNG will consult with the USFWS to resolve the conflict.

Management will be based on ecosystem management following three principles: old growth areas will be maintained, silvicultural practices will favor selection over regeneration cuts, and sustainable

conditions that fall within the natural range of variation will be maintained across the landscape (**Appendix E**).

## **7.4 WATER RESOURCE MANAGEMENT**

The AZARNG complies with applicable federal, state, and local regulations to protect water resources, including wetlands, estuaries, watersheds, and groundwater at Camp Navajo by managing point source and non-point source discharges. The AZARNG takes actions to reduce natural soil erosion and thereby protect nearby water quality. Land-based environmental degradation eventually affects water quality and aquatic ecosystems that are dependent upon good water quality. Because clean water is essential to all living things, maintaining water quality at Camp Navajo is a priority.

### **7.4.1 Clean Water Act: Section 404**

Section 404 of the CWA administered by the USACE regulates impacts on navigable waters and:

*“establishes a program to regulate the discharge of dredged and fill material into waters of the US, including wetlands. Activities in waters of the US that are regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and mining projects.” (EPA 2017).*

Camp Navajo plans to protect its current water resources whenever possible and feasible.

### **7.4.2 Wastewater Management**

Domestic and pre-treated industrial wastewater generated at Camp Navajo is discharged to a 60,000-gallon-per-day capacity wastewater treatment plant authorized by the State of Arizona Aquifer Protection Permit No. P-101528 and operated by Camp Navajo. Best available demonstrated control technology consists of nitrification/denitrification, clarification, chlorine disinfection, and de-chlorination. Recovered sludge from the treatment process is treated in an aerobic digester and removed for off-site disposal. Treated effluent is discharged from the treatment plant to holding ponds south of plant for evaporation. Effluent in excess of the capacity of the holding ponds can be applied to a permitted re-use site consisting of approximately 25 acres of native species of grass, non-native forage grass (tall fescue), and pine trees. The treatment system is designed such that there is no direct discharge to surface water or groundwater.

Discharge is monitored for flow, fecal coliform, total nitrogen, metals, and volatile organic compounds. Groundwater monitoring is not required.

### **7.4.3 Water Quality Protection**

Because water quality reflects environmental pollution, including erosion, maintenance of high-quality water is a goal of this INRMP. To do this, the AZARNG limits damage or alteration to existing or natural drainage patterns, minimizes soil erosion, and minimizes the potential for unintentional, accidental, or uncontrolled releases through the implementation of BMPs and by increasing Soldier environmental awareness.

Because Camp Navajo has a combined aggregate oil storage capacity of greater than 1,320 gallons, the base meets the criteria stipulated in the Title 40 CFR §112 and must prepare and implement a SPCCP. Camp Navajo has identified oil-handling practices and in-situ storage systems, control procedures, and

necessary countermeasures to minimize the potential for discharges and to prevent discharges from negatively impacting navigable WOTUS and surface water bodies. The majority of drainage is surface water run-off to roadside ditches or natural conveyances. Ultimately, this run-off discharges into Volunteer Canyon and flows off-site. The AZARNG has prepared and implements an SPCCP (AZARNG 2019) to respond to unanticipated discharges.

#### **7.4.4 Groundwater**

Groundwater is one of Camp Navajo's most valuable natural resources. Camp Navajo was located to take advantage of natural spring discharge from the Wild Bill Hill aquifer. However, the discharge rate is highly variable and has occasionally been insufficient to meet the needs of the installation. The water quality is good, but the shallow aquifer is influenced by surface water and may be vulnerable to pollution.

#### **7.4.5 Water Resources for Wildlife and Plants**

Pond 1 will be maintained for fish habitat (Section 5.4.3) and is stocked with trout when funding is available. Ponds 2 and 3 will remain closed to fishing and are not stocked. The AZARNG will work with the AGFD to ensure that potential modifications to these and other water sources do not adversely affect wildlife resources on the installation.

### **7.5 WETLANDS MANAGEMENT**

NEPA requires projects to be evaluated for possible environmental impacts and is the primary means by which threats to wetlands on Camp Navajo are identified. The AZARNG contracted the United States Army Engineer Research and Development Center, Waterways Experiment Station to conduct a wetland delineation project on Camp Navajo in 2001 (Mauney et al. 2001). The wetland delineation project was updated in 2015 by SWCA Environmental Consultants (SWCA 2015). The wetlands delineated during the surveys are potential WOTUS and subject to regulatory requirements under Section 404 of the CWA (WES 2001). Projects with the potential to affect a wetland will be in compliance with Section 404 of the CWA. In addition, impacts on wetlands that are not classified as the WOTUS will be avoided whenever possible.

### **7.6 SOILS**

The goal of soil management is to control sources of dust, runoff, silt, and erosion to prevent damage to land and water resources, installation equipment, facilities, and adjacent properties. The AZARNG implements BMPs to control erosion and sediment in Camp Navajo and maintains vegetative cover over all compatible areas. When bare ground is required for accomplishing mission objectives, other soil conservation measures (e.g., check dams, wind breaks, and diversions) are used to control dust, erosion, and sedimentation. To minimize land maintenance expenditures and ensure environmental compliance, physically intensive land-disturbing activities are sited on the least erodible lands (those requiring the least cover for erosion control).

Historically, soil erosion has not been a large problem at Camp Navajo, and surveys were completed in 2000 (NRCS 2000). In coordination with ITAM and OOD, roads/trails will continue to be maintained with V-ditches and culverts, and vegetation will be maintained at roadway edges to protect soil from erosion.

## 7.7 FOREST MANAGEMENT

The Camp Navajo Forest Management Plan (**Appendix E**) defines the direction and guidelines for implementation of ecologically based forest and grassland management (**Appendix A, Figure 15**). Forest management is needed to restore forest resiliency and function and achieve the Soldier training and storage mission at Camp Navajo. Resiliency increases the ability of the forest to survive disturbances such as insect, disease, fire, and climate change.

The necessity for rigorous and realistic training requires that AZARNG units periodically use large, diverse natural areas, as well as urbanized terrain, for maneuver and range training. Current forest conditions on Camp Navajo are prone to catastrophic wildfires and pose a threat to fulfilling this requirement and to the overall future of Camp Navajo.

Research performed at Camp Navajo indicates that prior to European settlement there were approximately 60 trees per acre with a frequent low intensity fire interval. Current data indicates approximately 512 trees per acre exist in forested areas. The overall forest structure and composition on the landscape at Camp Navajo is predominantly dense, homogenous, young to mid-aged forest lacking structural diversity. This described forest structure is at high risk of stand-replacing wildfire (Fulé et al 1997). Excess tree density currently limits the availability of suitable bivouac sites, drop zones, landing zones, and maneuver areas. There is a need to treat forest vegetation to create a diversity of forest conditions for Soldier training and reduce the risk of high-intensity crown fires originating from training activities (e.g., smoke grenade use, pyrotechnics, and artillery simulators) and other ignition sources (lightning and other human causes). Forest thinning is needed to develop the footprint of planned bivouac sites, drop zones, and landing zones and to improve conditions for Soldier training. Open areas are needed to provide for maneuver training, and dense areas are needed for concealment.

ARs for protection and enhancement of the environment require accounting of forest products and completion of commercial harvests before starting any construction activities that may impact forest resources (AR200-1; 4-3; d8 [p]). A detailed schedule of proposed forest and grassland treatments is included in the Camp Navajo Forest Management Plan (**Appendix E**) and in Section 8.2.1 of this INRMP.

### 7.7.1 Personal Use Firewood Cutting

Current Camp Navajo employees, AZARNG personnel, and all active and retired military are authorized to obtain woodcutting permits from the NRM. Wood offered for sale and cutting includes pine and oak (species that are abundant). Individuals are authorized to cut and remove dead standing and dead and downed trees with certain diameter restrictions (less than 8 inches diameter at breast height) for both pine and oak. The permit does not allow for live oak to be harvested. Oak cutting season is generally 1 June to 1 October. Cutting is restricted to designated areas, which are determined by the NRM. No woodcutting will be allowed in the MSO PACs during the MSO breeding season, though removal of hardwoods, downed woody debris, snags, or other key habitat variables is generally allowed when deemed compatible with owl habitat management objectives and documented through reasoned analysis. Pine cutting season is year-round, from 1 January to 31 December, when weather and road conditions permit. Permittees are required to turn in completed permits at the end of the calendar year. This will assist NRM to determine the amount of wood being harvested in this program. There is a charge per cord for cutting oak (AR200-1). When firewood proceeds are collected, they will be deposited into the federal treasury forestry reimbursable account.

## 7.8 FIRE MANAGEMENT

Southwestern ponderosa pine forests were historically shaped by frequent, low-intensity surface fires, varying climate cycles, infrequent regeneration pulses, and insect outbreaks. Fire exclusion and grazing activities over the last 120 years have altered the overall structure and composition of ponderosa pine forests in the Flagstaff area. Current conditions include decreased competition from grass species, increased survival of tree seedlings, an invasion of trees into grasslands, and an accumulation of litter on the forest floor. All these changes in forest conditions have compromised the long-term health and integrity of forest resources and significantly increased the potential of stand-replacing crown fires. Crown fires are more likely to burn at higher intensities and cause more ecological damage. As the conditions at Camp Navajo are conducive to these higher damage fire scenarios, the risk for catastrophic impact to operations and natural resources from wildfire is high.

### 7.8.1 Integrated Wildland Fire Management Plan

The overall plan for fuels reduction and reintroduction of fire at Camp Navajo can be found in **Appendix F**. The Integrated Wildland Fire Management Plan (IWFMP) was developed by the AZDEMA FMO EMO. Individual planned fuels reduction and prescribed burning projects are also listed in the Project Matrix (**Appendix G**) and the Camp Navajo Forest Management Plan (**Appendix E**). The IWFMP was developed to reduce wildfire potential, effectively protect and enhance valuable natural resources, integrate applicable state and local permit and reporting requirements, and implement ecosystem management goals and objectives. The IWFMP is reviewed and updated annually and revised at a minimum of once every five years. The IWFMP directly supports installation missions and is consistent with installation emergency operations plans. The IWFMP integrates with this INRMP, and the installation's fire emergency services plan. The IWFMP ensures integration by including organizations having fire responsibility on the installation in its development. The IWFMP coordinates with installation mission operations and other appropriate installation organizations.

Camp Navajo is a party to the Ponderosa Fire Advisory Council; parties to the agreement have agreed to provide mutual aid to all other parties. Other signatories to this agreement include the ASLD, Arizona Department of Forest and Fire Management, City of Flagstaff, Highlands Fire District, Mormon Lake Fire District, Pinewood Fire District, Ponderosa Fire District, Sedona Fire District, and Summit Fire District.

### 7.8.2 Wildfire Prevention and Suppression

The goal of wildfire prevention and suppression is to mitigate fire hazards and control vegetative growth to the degree essential for the safety of the installation and its natural and cultural resources. The AZARNG monitors land use activities within Camp Navajo for fire hazards and adjusts them, including suspending activities, to avoid high hazard areas and/or periods when the fire danger rating is high. The AZARNG also will consider developing a plan to manage naturally occurring fires (e.g., lightning) under specific prescribed natural fire conditions to meet resource objectives (**Appendix F**); however, at this time, no naturally caused wildfires (resource benefit fires) will be treated as prescribed fires and allowed to burn. The AZARNG will consult with USFWS and AGFD personnel prior to implementing changes in fire prevention activities to ensure the protection of sensitive wildlife and their habitats.

Fire protection on the installation is focused in three areas: prevention, preparedness, and suppression. Fire prevention, preparedness, and suppression clauses are included in logging contracts. These clauses give specific instructions on warming fires, smoking, and spark arresters on equipment.



The current high risk of active crown fire has necessitated a well-developed wildfire prevention and suppression program (**Appendix F**).

#### 7.8.2.1 Prevention

Fire prevention not only protects from a loss of natural resources but also reduces the cost of fire suppression. When possible, installation personnel will remove vegetation, weeds, and brush from around buildings, storage igloos, and fence lines to create firebreaks. Slash from thinning or logging operations is removed or piled by the operator and burned by the installation's fire department or contracted agency when conditions are appropriate.

Volunteer Canyon and Volunteer Mountain are both prime areas for fire prevention activities. Steep slopes and past protection from fire have created large thickets of oak and various shrubs that are highly prone to fire. Clearing or thinning a portion of the thickets in these areas to improve habitat for turkeys and to reduce fuel loads will occur as resources are made available. Clearing will be done mostly by hand to reduce damage to other natural resources. Where the situation warrants, other means of clearing, such as controlled burns, or mechanical methods will be used. Prior to conducting fire suppression activities on Volunteer Mountain or in Volunteer Canyon, the AZARNG will consult with USFWS to ensure that activities are not likely to adversely affected the MSO or its critical habitat.

Both the Kaibab and the Coconino national forests have highly defined fire management plans. Because Camp Navajo is located between the two forests, it is affected by these plans and is working to adopt the preventative measures included within them. The wildfire preventive measures within these plans include:

- Prescribed burnings when deemed necessary.
- Outreach programs to educate the public on wildfire prevention.
- Thinning where possible (mostly removing smaller trees).
- Facilitate cutting to reduce locust (a highly flammable tree/shrub) spread after prescribed burns and thinning.

Five USFS lookout towers have visibility of Camp Navajo. Each lookout tower manned by USFS personnel is capable of seeing smoke on the installation. During fire season, daily air patrols over USFS land adjacent to Camp Navajo are currently conducted by Coconino and Kaibab national forests, while ground patrols are performed by AZDEMA personnel.

#### 7.8.2.2 Suppression

Fire suppression on Camp Navajo is handled by the installation's Fire Department. There are three causes of fire on Camp Navajo: natural ignitions (e.g., lightning strikes), military activities (detonation of ammunition and firing activities), and non-military activities (campfires, vehicles, hunting, etc.). Although there is not much data recorded, most of the fires in forested areas of the installation have been caused by lightning strikes in snags (standing dead or dying tree). Measures for prevention and quick suppression of wildfire include the following:

- Forest fuel treatment projects designed to restore forest resiliency;
- Regulating the net explosive weight used during detonations based on potential fire conditions;

- Monitoring climatic conditions, so detonation occurs only when humidity levels are high and air temperatures are low;
- Requiring the presence of Fire Department personnel and suppression equipment during detonations;
- Restricting certain operations (e.g., logging, welding, campfires, etc.) during increased fire risk;
- Requiring an open-flame permit for all campfires and warming fires;
- Requiring all vehicles entering the ASA to have a fire extinguisher; and
- Smoking being allowed outside the ASA but only within vehicles or areas free of combustibles.

The Camp Navajo fire chief oversees fires that occur on Camp Navajo. The fire station, located within the Cantonment Area, has fire crews available to assist outside agencies in fire suppression. Firefighters are cross-trained so they are proficient in fighting structural fires as well as range and forest fires.

There were approximately 58 miles of firebreaks in place on Camp Navajo, which occurred primarily along existing roads. These firebreaks have not been maintained in recent years and are not expected to be effective under the current heavy fuel loading (primarily live fuels). There are no current plans to create other fuel breaks, though the current firebreaks are planned to be maintained as long as funding and personnel are available. Forest thinning treatments are needed to reduce fire risk under current fuel loads. If new firing ranges are established, forest thinning will occur around the perimeters. Water for fire suppression is available from the five railroad tanker cars (within the ASA) as well as springs and ponds located throughout Camp Navajo.

### **7.8.3 Wildland Fire and Proposed Fire Treatment Impacts on Natural Resources**

The most significant impact from wildfire on natural resources is the loss of woody vegetation, which consequently affects the diversity of forest conditions for Soldier training, wildlife habitat, and the entire ecosystem. Sensitive species most affected by large-scale, high-intensity wildland fire are the MSO, northern goshawk, bald eagle, and occult little brown bat. Many of the sensitive plants found on Camp Navajo require ponderosa pine or other overstory forest habitat. Loss of vegetation also increases potential for soil erosion.

Overall, fire behavior models run in conjunction with proposed treatments as reflected in the Forest Management Plan showed an estimated 88 percent decrease in predicted active crown fire, a 41 percent decrease in passive fire, and a 23 percent increase in surface fire (Horncastle et al. 2011). Treatments are expected to reduce the risk of large-scale, high-intensity wildfire and associated adverse effects while maintaining the military mission.

### **7.8.4 Inventory of Snags**

The AZARNG intends to monitor stands for snags on an annual basis and monitor benchmark snags every three years. The AZARNG, in cooperation with AGFD, conducted an initial inventory of snags on Camp Navajo in 2007 (Partridge et al. 2007). The purpose of this project was to survey snags within the ponderosa pine forest, identify benchmark snags, and permanently tag a representative sample for long-term monitoring. This inventory provided the AZARNG with baseline information about snag density and age prior to implementing forest management treatments. It will be used to assess decay rates and retention rates over time via its comparison against future monitoring efforts. The monitoring efforts informed by this initial study (planned for 2020 onward) will help the AZARNG assess the effects of

forest management treatments on snag recruitment. This information, combined with wildlife surveys, will provide insight to long-term effects that forest management may have on wildlife species in the ponderosa pine community.

### **7.8.5 Outreach**

The IWFMP (**Appendix F**) includes outreach to inform the media and public of wildfire incidents and prescribed burning activities. Activities associated with wildland fire and forest management will be incorporated into the installation and public awareness programs.

## **7.9 INTEGRATED PEST MANAGEMENT**

### **7.9.1 Integrated Pest Management Plan**

The AZARNG IPMP (**Appendix M**) describes pest management methodologies and practices for use at Camp Navajo (AZARNG 2013b). It includes mechanical, cultural, biological, and chemical controls and outlines training, certification, and quality control. All chemical treatments will be completed by a certified applicator and will follow label instructions for treated species. In addition, the BMP of washing vehicle undercarriages to prevent the spread of noxious and invasive weeds (spotted knapweed, scotch thistle, Dalmatian toadflax, field bindweed, and cheatgrass) is requested in natural resources management operations. Further goals and objectives for the control of noxious weeds and invasive are delineated in *Section 8.1.1 Forest Management Goals and Objectives*.

## **7.10 OUTDOOR RECREATION**

The goal of maintaining public access to Camp Navajo supports natural resources-based recreation and education while maintaining military readiness. The AZARNG allows sustainable public use of Camp Navajo's natural resources to the extent that the use does not conflict with the requirements necessary to ensure safety and military security and is not inconsistent with the needs of wildlife resources. Outdoor recreation can contribute to quality of life for the surrounding community. The ability of the land to support natural resources-based recreation is sufficient and has remained relatively unchanged in recent years.

### **7.10.1 Military Mission Considerations**

The military mission has priority over outdoor recreation. The United States Army has been training Soldiers for over a century while providing quality recreational opportunities for Soldiers, their families, employees, and the general public. The AZARNG has determined that there is no conflict between these goals at Camp Navajo.

### **7.10.2 Public Access**

Since Camp Navajo stores munitions and missiles, the security requirements are very high. High levels of security and explosive site safety requirements limit the amount of public access that can be provided without impacting the military mission. DoD Directive 4715.03, *Natural Resource Conservation Program*, 18 March 2011, states,

*“The principal purpose of DoD lands and waters is to support mission-related activities. Those lands and waters shall be made available to the public for educational or recreational use of natural and cultural resources when such access is compatible with military mission activities,*

*ecosystem sustainability, and other considerations such as security, safety, and fiscal soundness. Opportunities for such access shall be equitably and impartially allocated.”*

Paragraph 4-3 of AR 200-1, *Land Resources*, states that the Army will

*“Provide for controlled recreational access where feasible at Army installations containing land and water areas suitable for recreational use. (LD: 16 USC 670a).”*

This regulation further states that hunting, fishing, and trapping plans will be included in the INRMP for installations that have such programs. The public is allowed access to the Camp Navajo buffer areas if they have received MEC Awareness training and possess a Camp Navajo hunting license or woodcutting permit.

### **7.10.3 Camping**

Camping is well regulated and has little to no effect on Camp Navajo resources. Current and retired AZARNG members, Camp Navajo employees, as well as their dependents and guests are allowed to camp on the installation in the Tappen Springs area or the RV park (**Appendix A, Figure 2**). Civilians are allowed to camp within the RV park within the Cantonment Area (**Appendix A, Figure 2**) if they have a valid hunting permit. No open fires are allowed; fires require a permit from the installation Fire Department and must be contained in designated fire pits. Smoking must be done in a vehicle or area free of combustible materials. Outdoor cooking must be done on a grill. Campers are prohibited from dumping untreated wastewater (gray water and black water) on the ground at Camp Navajo. Traveling in the buffer area at night is prohibited. Parties wishing to use the installation for camping must check in daily with Camp Navajo Security and/or the campground host. With these restrictions in place and enforced, adverse impacts to natural resources are mitigated.

### **7.10.4 Off-Highway Vehicles**

Vehicles commonly used as off-highway vehicles (OHVs) that have a four-wheel chassis and are licensed may be used on Camp Navajo for hunting. Vehicle operators must remain on designated trails and roads, with the only exception being to recover harvested game. This exception applies only when the operation can ensure that the vehicle will not damage archeological sites or a wetland area.

## **7.11 ENFORCEMENT**

### **7.11.1 History and Authority**

The AZARNG employs security personnel who serve Camp Navajo 24 hours a day. Security personnel have military authority only. Non-military incidents are handled by the appropriate agency—AGFD, Coconino County Sheriff, or the Arizona Department of Public Safety. Security personnel are involved in natural resources protection, have the authority to deal with wildlife law enforcement, and have received the appropriate training. They collect recreation information by performing game checks, creel surveys, and hunter interviews. AGFD has the responsibility for enforcing and administering State of Arizona fish and wildlife laws and regulations at Camp Navajo.

### **7.11.2 Jurisdiction**

Camp Navajo is under concurrent jurisdiction. Natural resources laws on the installation can be enforced by officers with federal or state commissions, but wildlife enforcement is the responsibility of AGFD.

Citations written by AGFD are adjudicated by the State of Arizona court system. AZARNG members and employees observing suspicious hunting activities are encouraged to call the Operation Game Thief hotline at 1-800-352-0700 and/or report it to Camp Navajo Security.

### **7.11.3 Enforcement Problem Areas**

Nationwide hunting and fishing programs require the most enforcement within natural resource programs. Camp Navajo permits hunting and fishing as outdoor recreational activities; these activities require enforcement personnel oversight. Though restrictions are in place, some users access the installation illegally. Such entry can be the precursor to illegal activities at Camp Navajo. Most of these illegal activities either directly or indirectly impact efforts to protect natural resources. Illegal entry into the installation is sometimes difficult to prevent, as limited manpower makes it difficult for the boundary of Camp Navajo to be patrolled. Camp Navajo is currently fenced, but the fence is susceptible to vandalism. Damage to the fence provides easy access to Camp Navajo's buffer area. The current fence along Camp Navajo's boundary is a four-strand fence, with barbed wire as the three upper strands and smooth wire as the lower strand.

#### **7.11.3.1 Poaching**

Arizona state hunting licenses are issued by AGFD. Hunters wishing to hunt on Camp Navajo must also obtain a Camp Navajo-specific permit and are subject to additional restrictions (including where hunting can occur and what weapons can be used). Hunters must check in with Security before and after hunting. Security ensures that everyone entering the installation has permission and that hunters leave the installation daily or are camping or staying in on-site billeting. Security is responsible for checking that wildlife kills are properly tagged. Illegal kills that are discovered are turned over to AGFD for prosecution.

### **7.11.4 Natural Resources Enforcement**

The current enforcement system is responsive to the protection of natural and cultural resources at Camp Navajo. The current system appears to be fully capable of continuing the same standard of enforcement for Camp Navajo.

### **7.11.5 Enforcement of Fish and Wildlife Laws**

USFWS has the responsibility to enforce federal fish and wildlife laws and regulations. AGFD has the responsibility to enforce state fish and wildlife laws and regulations. AGFD manages the fish and wildlife resources for the State of Arizona through hunting and fishing permits. These responsibilities include the hunting program at Camp Navajo.

## **7.12 CULTURAL RESOURCE PROTECTION**

### **7.12.1 Cultural Resource Management**

Cultural resources on Camp Navajo are managed and protected through historic preservation laws, regulations, and other provisions including but not limited to the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act (NAGPRA), and AR 200-4 Cultural Resource Management. An overview of Camp Navajo cultural resources can be found in section 3.8.1 of the Camp INRMP EA (**Appendix B**).

### 7.12.2 Consultation

The AZARNG consults with SHPO to determine eligibility of sites for listing on the National Register of Historic Places (NRHP) and Arizona Register of Historic Places in accordance with the NHPA of 1966 and its implementing regulations (as amended 36 CFR PART 800). In accordance with the NHPA and the Annotated DoD American Indian and Alaska Native Policy, the AZARNG also consults with federally recognized Tribes whose traditional territories may have overlapped Camp Navajo, including the Pueblo of Zuni, Navajo Nation, Yavapai-Apache Nation, Hualapai Tribe, Hopi Tribe, Havasupai Tribe, Fort Mojave Indian Tribe, the Fort McDowell Yavapai Nation, and San Carlos Apache.

### 7.12.3 Regulations

The AZARNG is working to update the Integrated Cultural Resources Management Plan and agreements with SHPO and interested Tribes. These agreements will address protection of these archaeological resources and management of all cultural resources within Camp Navajo. The procedure for inadvertent discovery will follow 36 CFR 880.12 and Interim Procedure Plan until the Programmatic Agreement is in place (**Appendix K**).

### 7.12.4 Human Remains

Any human remains and associated funerary objects that exceed 50 years in age discovered on Camp Navajo are protected by NAGPRA (25 USC 3002 (d) and NAGPRA regulations (43 CFR 10). If Native American remains or funerary objects are identified during project activities, work in the immediate area will be halted and AZARNG shall take all reasonable steps necessary for the protection of the remains and objects.

### 7.12.5 Section 106

All requirements under Section 106 of the NHPA will be followed for all natural resources management activities, including all ground disturbing activities associated with forest management (such as harvesting activities), habitat management (e.g., physical soil preparation for food plots and over plantings), pond and wetland construction, cantonment area management, soil surveys, land rehabilitation, and maintenance (e.g., terrain modification for erosion control and restoration). AZARNG will continue to follow its Interim Procedure Plan (Section 7.12.6) regarding Section 106 compliance until the Programmatic Agreement is finalized (**Appendix K**).

### 7.12.6 Interim Procedures Plan

The AZARNG Cultural Resources Program manager receives notification of pending Federal Undertakings activities. The AZARNG Cultural Resources Program manager reviews the notification and/or sends it to AZARNG cultural resources contractors for review. This review includes a Class I cultural resources inventory to assess whether the Area of Potential Effect (APE) has been subject to previous Class III cultural resources inventory and whether any known cultural resources are present within the APE.

- If the APE HAS been subject to previous Class III inventory that meets current Arizona State Museum (ASM) and SHPO standards and NO cultural resources are present within 30 meters of the APE, then the AZARNG Cultural Resources Program manager and/or the cultural resources contractors shall prepare a SHPO Survey Report Summary Form (SRSF) with the results of the Class I inventory.

- If the APE HAS been subject to previous Class III inventory that meets current ASM and SHPO standards and NRHP-eligible or unevaluated cultural resources are present, then the AZARNG Cultural Resources Program manager will work with AZARNG commanders to revise the training effort, if possible, to avoid NRHP-eligible and unevaluated cultural resources.
  - In order to ensure avoidance, the AZARNG Cultural Resources Program manager and/or cultural resources contractor may mark the site boundaries for avoidance. Additionally, monitoring may be conducted to ensure either the avoidance or minimization of any adverse effects. In most cases, monitoring shall be done during implementation of the training exercise; however, there could be instances due to timing, safety, and/or security when monitoring during training implementation is not possible. In these cases, the AZARNG Cultural Resources Program manager and/or cultural resources contractor shall conduct post-training implementation monitoring. Either a memo report or full technical cultural resources monitoring report of all monitoring efforts and results shall be prepared as appropriate.
- If the APE HAS NOT been subject to previous inventory or the previous inventory is deemed to not meet current standards, then if time permits, the AZARNG Cultural Resources Program manager and/or cultural resources contractors will conduct a Class II or Class III inventory of the APE as appropriate in order to identify and evaluate historic properties.
  - If NO cultural resource sites, structures, buildings, or districts are identified during the Class III inventory, then an SRSF shall be prepared.
  - If cultural resource sites, structures, buildings, or districts are identified, then a Class III cultural resources inventory technical report shall be prepared to ASM and SHPO standards.
  - If cultural resources that the AZARNG Cultural Resources Program manager determines are ELIGIBLE for listing in the NRHP and/or cultural resources of indeterminate NRHP-eligibility are identified during the Class II or Class III survey, then the AZARNG Cultural Resources Program manager and/or cultural resources contractor may mark the site boundaries for avoidance and/or conduct monitoring to ensure either the avoidance or minimization of any adverse effects. Monitoring and subsequent reporting shall be implemented as described above.
- Due to the sensitivity and necessary timeframes of the anticipated AZARNG training efforts, there may be occasions when the completion of a Class II or Class III inventory of the APE is not feasible prior to training implementation. In these cases, the AZARNG Cultural Resources Program manager and/or cultural resources contractors shall conduct monitoring either during the training activities or post-training inspection to assess any effects of the training on cultural resources. Subsequent reports of these monitoring and post-training assessment activities shall be prepared as described above.
- The AZARNG shall submit all reports described above to the SHPO and other consulting parties for review and comment. Every effort shall be made to provide the SHPO and other consulting parties a 30-day review and comment period; however, given the national security nature of these training efforts, the AZARNG recognizes that there will be cases when providing consulting parties with a full 30-day review period is not feasible. In these cases, the reports that shall document the efforts taken by the AZARNG to comply with Section 106 of the NHPA.

### **7.12.7 Natural Resources Management Implications for Cultural Resources**

Natural resources management on Camp Navajo has potential to affect cultural resources and historic properties, especially with respect to traditional cultural properties and resource uses. Natural resources practices with potential to adversely affect cultural resources are outlined below.

- **Prescribed burning:** Prescribed fire has some potential to affect archeological sites by denuding areas of vegetation and promoting erosion. Fire has greater potential to adversely impact historic archeological sites with significant surface features. Generally, prescribed burns would have positive effects for historic properties management if burning schedules can be coordinated to assist in archaeological inventory.
- **Forest Management:** Proposed forest treatments using mechanical thinning methods have the potential to affect archeological sites through ground disturbance.
- **Firebreak maintenance:** Maintenance of firebreaks involves significant ground disturbance that can damage archeological sites and promote erosion. However, without firebreaks, the potential impacts from a large-scale wildfire and subsequent erosion would be much greater.
- **Outdoor recreation programs:** Public access associated with hunting, fishing, woodcutting, and outdoor recreation activities has limited potential to increase the risk of vandalism to archeological sites.

Even with proper review, natural resources projects still have some potential to affect archeological sites through accidental discovery. Natural resources management can be used to protect and sustain historic properties, traditional cultural properties, and sacred sites. AZARNG will implement this INRMP in a manner consistent with the protection of historic properties on Camp Navajo.

## **7.13 PUBLIC OUTREACH**

### **7.13.1 Conservation Education**

The AZARNG coordinates environmental issues with government agencies, private organizations, and the public. Conservation education provides a means to develop and distribute materials related to the sound environmental stewardship of AZARNG natural resources. Conservation education efforts involve and inform troops and the public in natural resources stewardship efforts.

### **7.13.2 Hunter Education**

Hunters on Camp Navajo must attend an installation orientation/safety briefing prior to hunting and must possess an Arizona Hunter Education card, National Rifle Association card, or the equivalent. The installation orientation/safety briefing covers the regulations particular to the installation (such as the locations of restricted areas), meets the requirements of MEC and cultural resources awareness training, describes required check-in procedures, and conveys restrictions related to OHV and weapons use. This required briefing provides an excellent opportunity for Camp Navajo to provide hunters and other recreational users with natural and cultural resources information and general environmental awareness. Camp Navajo incorporates natural resource awareness information into these briefings.



### **7.13.3 Youth Groups**

Natural resources personnel have cultivated a conservation ethic in local youth in the past and will continue this effort. On occasion, personnel have given talks about natural resources to youth groups such as the Boy Scouts of America. Because work with youth groups is an investment in the future, Camp Navajo's natural resources personnel will continue to work with these groups whenever possible.

### **7.13.4 Other Conservation Education Opportunities**

Because of the secure nature of Camp Navajo, interpretive trails throughout the installation are not feasible. However, Camp Navajo does maintain a Congressional Medal of Honor Park in the Cantonment Area. This park contains 21 different species of trees that are each associated with a Congressional Medal of Honor recipient. At the base of each tree is a plaque with information on the recipient as well as the tree species. This park will be maintained. Other potential conservation education opportunities are being developed such as interpretive centers at Indian Village and Prisoner of War Camp on Camp Navajo as well as participation in events or presentations throughout the local community.

### **7.13.5 Best Management Practices**

Camp Navajo implements a variety of BMPs developed from those described in the installation's SPCC and Hazardous Waste Management Plans and adapted from those in the United States Department of Agriculture's Four Forest Restoration Initiative Management Plan (Four Forest Restoration Initiative manages similar ecosystems; thus, their practices are useful to emulate on Camp Navajo) to help manage its resources. The BMPs followed by Camp Navajo to best implement its soil, water, wildlife, cultural, and fire management can be found in **Appendix J**, which includes both BMPs that Camp Navajo already implements and BMPs Camp Navajo intends to implement under the INRMP (this is denoted in columns in the appendix).

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## SECTION 8 MANAGEMENT GOALS AND OBJECTIVES

The goal of natural resource management within Camp Navajo is conservation of natural resources while supporting training. These efforts, goals, and objectives are specifically designed to maintain quality military training lands, while minimizing long-term costs and adverse impacts to natural resources. **Appendix G**, the project matrix, provides a list of specific projects with estimated cost and program dates that support the following goals and objectives found in this section.

The environmental policy at Camp Navajo is to provide forest resiliency; diversity of species and habitat; natural beauty; outdoor recreation opportunities; habitat for plants and wildlife, including threatened and endangered species; soil conservation and watershed protection, including erosion control; improvement of air and water quality; sustained production of commercially valuable forest products; noise abatement; and the sustainment of viable and diversified training lands to meet the military mission. Projects will be completed when funding becomes available based on priority set by the AZARNG.

### 8.1 FOREST MANAGEMENT

#### 8.1.1 Forest Management Goals and Objectives

**GOAL 1:** Manage forests to sustain military readiness and improve the diversity of conditions available for Soldier training (**Appendix A, Figure 15**).

**OBJECTIVE 1A:** Implement the Camp Navajo Forest Management Plan (**Appendix E**) to support Soldier training and the storage mission at Camp Navajo. Primary objectives of the Camp Navajo Forest Management Plan are to reduce active crown fire and bark beetle risk, improve forest structural diversity, improve the health and vigor of the herbaceous and shrub component, maintain effective ground cover and native plant diversity, improve wildlife habitat and ecosystem structure and function, and develop a diversity of forest conditions suitable for Soldier training. Site-specific objectives and treatments are described in further detail in the Camp Navajo Forest Management Plan.

Forest management objectives will be accomplished by offering forest products for sale, timber sale contracts, or service contracts. Any proceeds from future timber sales or product sales will be deposited into the Conservation Reimbursable and Fee Collection Program forest reimbursable account according to current to ARs.

**OBJECTIVE 1B:** Ensure sufficient dead and downed woody debris and snags remain throughout forested areas.

**OBJECTIVE 1C:** Maintain or enhance soil productivity. Establish vegetation cover that protects the soil from erosion.

**OBJECTIVE 1D:** Allow harvesting of forest products, including other consumptive and non-consumptive activities derived from the forest environment, when consistent with protecting and maintaining a viable forest ecosystem.

**OBJECTIVE 1E:** Manage aspen groves to provide an understory containing herbaceous plants for turkeys to feed on during the critical period of early spring when the sexes have different food requirements.

**GOAL 2:** Control noxious weeds and invasive species.

**OBJECTIVE 2A:** Reduce and prevent the spread of non-native species.

**OBJECTIVE 2B:** Monitor invasive species and noxious weeds.

**GOAL 3:** Sustain or improve current conditions of the training site.

**OBJECTIVE 3A:** Provide designated areas for sustainable military training operations that maintain ecosystem integrity.

## **8.2 GRASSLAND AND MEADOW MANAGEMENT**

Grasslands, mountain meadows, and wet meadows are found on Camp Navajo. These areas are important to sustain military training; provide forage for deer, elk, and pronghorn; provide movement corridors for pronghorn; and provide habitat for many species of birds and small mammals.

### **8.2.1 Grassland and Meadow Management Goals and Objectives**

**GOAL 4:** Restore resiliency and function to grassland and meadow habitats.

**OBJECTIVE 4A:** Restore historic grassland conditions.

**OBJECTIVE 4B:** Increase ground cover and native diversity to reduce and prevent non-native species from establishing and to protect from soil erosion.

**OBJECTIVE 4C:** Restore meadows to natural conditions (**Appendix A, Figure 16**).

## **8.3 WATER RESOURCES**

The AZARNG will comply with applicable federal, state, and local regulations to protect water resources, including wetlands.

### **8.3.1 Water Resources Goals and Objectives**

**GOAL 5:** Maintain water quality and sustain wetland and riparian in functional condition.

**OBJECTIVE 5A:** Maintain and enhance earthen water tanks for wildlife away from major training areas and ranges.

**OBJECTIVE 5B:** Identify and protect ephemeral streams from disturbance.

**OBJECTIVE 5C:** Manage and maintain ecosystem function of wetlands.

**OBJECTIVE 5D:** Restore springs to natural conditions.

## **8.4 SOIL MANAGEMENT**

Soils will be managed on Camp Navajo in order to decrease and/or prevent erosion and the contamination of groundwater.

### **8.4.1 Soil Management Goals and Objectives**

**GOAL 6:** Protect soils to prevent erosion and maintain realistic training ground for missions.

**OBJECTIVE 6A:** Reduce the footprint and impact of hardened sites.

**OBJECTIVE 6B:** Protect ecologically sensitive areas.

**OBJECTIVE 6C:** Improve roads and trails.

## **8.5 SPECIAL STATUS PLANT AND WILDLIFE MANAGEMENT MEASURES**

In addition to the aforementioned measures listed under forest, meadow, grassland, and water resource management, there are additional measures needed to protect special status plant and animal species. The aforementioned goals and objectives help lay out the process to protect various ecosystems needed for said wildlife populations. The following are more specific research and management needs to ensure the viability of species within the ecosystems. The AZARNG protects native plants within Camp Navajo by compliance with ANPL and ESA.

### **8.5.1 Special Status Plant and Wildlife Management Goals and Objectives**

**GOAL 7:** Protect native plants.

**OBJECTIVE 7A:** Maintain native plant diversity through the management of sensitive habitats.

**GOAL 8:** Manage MSO PACs and recovery habitat.

**OBJECTIVE 8A:** Implement the Recovery Plan for the MSO.

**OBJECTIVE 8B:** Continue to follow conservation measures from existing 2005 and 2015 BOs (Appendix H).

**GOAL 9:** Manage bald eagle populations.

**OBJECTIVE 9A:** Continue to follow bald eagle mitigation from existing 2005 and 2015 BOs (Appendix H).

**GOAL 10:** Manage northern goshawk.

**OBJECTIVE 10A:** Survey and monitor northern goshawk populations.

**GOAL 11:** Monitor and study passerine and raptor species.

**OBJECTIVE 11A:** Monitor and study passerine and raptor populations.

**GOAL 12:** Manage small mammal populations.

**OBJECTIVE 12A:** Monitor and study bat populations.

**OBJECTIVE 12B:** Monitor Gunnison's prairie dog populations.

## **8.6 GAME MANAGEMENT**

Game species are managed by analyzing scientific data to determine hunting quotas, maintain healthy populations and environments, and improve those that have become degraded. The AZARNG and AGFD will meet annually to discuss changes to the hunting program on Camp Navajo.

### **8.6.1 Game Management Goals and Objectives**

**GOAL 13:** Manage big game species (elk, pronghorn, mule deer, and Merriam's turkey).

**OBJECTIVE 13A:** Protect important big-game habitat features located away from major training areas.

**OBJECTIVE 13B:** Ensure viable species populations.

## **8.7 PEST SPECIES MANAGEMENT**

Pest management at Camp Navajo is implemented according to the goals and objectives detailed in the AZARNG IPMP. The criteria and measurements for success of this goal are detailed in the AZARNG IPMP (AZARNG 2013b).

## **8.8 WILDLAND FIRE MANAGEMENT**

Camp Navajo lands will be managed proactively to reduce wildland fire potential. Wildland fires will be managed on Camp Navajo in order to maintain training lands and protect and enhance valuable natural resources.

### **8.8.1 Wildland Fire Management Goals and Objectives**

**GOAL 14:** Manage wildland fires to sustain Camp Navajo training lands.

**OBJECTIVE 14A:** Implement the IWFMP (**Appendix F**) for Camp Navajo to reduce wildfire potential, effectively protect and enhance valuable natural resources, integrate applicable state and local permit and reporting requirements, and implement ecosystem management goals and objectives.

## **8.9 ENFORCEMENT MANAGEMENT**

The goal of the enforcement program is to manage for an efficient response to an incident by the appropriate authority (security personnel, MP, AGFD, Coconino County sheriff, or Department of Public Safety).

### **8.9.1 Enforcement Management Goals and Objectives**

**GOAL 15:** Enforce wildlife and natural resource laws to best manage, maintain, and protect resources.

**OBJECTIVE 15A:** Enforce wildlife and natural resource laws and state and federal regulations.

## **8.10 CULTURAL RESOURCE PROTECTION**

The goal is to protect cultural resources during INRMP related actions, including recreational activities.

**GOAL 16:** Protect cultural resources during INRMP-related actions

**OBJECTIVE 16A:** Implement cultural resource survey and monitoring requirements for INRMP-related actions.

**OBJECTIVE 16B:** Develop a plan for determining the limits of acceptable change for recreational and natural resources.

### **8.10.1 Public Outreach**

The goal of public outreach is to continue to implement proactive programs involving government agencies, private organizations, and the public.

**8.10.1.1** Public Outreach Goals and Objectives

**GOAL 17:** Educate Soldiers and the public as to how their activities impact the environment and their responsibilities as stewards of the environment.

**OBJECTIVE 17A:** Educate Soldiers and the public on environmental issues.

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## SECTION 9 IMPLEMENTATION

The AZARNG depends on natural resources for the sustainability of many training programs and will manage natural resources to ensure sustainable use. The INRMP is not intended to impair the ability of the AZARNG to perform its mission. However, the INRMP does identify usage restrictions on sensitive attributes such as wetlands and threatened and endangered species.

Implementation of this INRMP will be realized through the accomplishment of specific goals and objectives as measured by the completion of projects described within this INRMP. In accordance with the 25 May 2006 *Army Guidance for Implementation of the SAIA*, an INRMP is considered implemented if an installation:

- Actively requests, receives, and uses funds for “must fund” projects and activities required to meet recurring natural resources conservation management requirements or current natural resources compliance needs;
- Ensures that sufficient numbers of professionally trained natural resources management staff are available to perform the tasks required by the INRMP;
- Coordinates annually with cooperating agencies; and
- Documents specific INRMP action accomplishments undertaken each year.

### 9.1 PROJECT MATRIX AND FUNDING

**Appendix G**, the project matrix for Camp Navajo, is used to develop budget requests and schedule annual project requirements. Funding requests are submitted in accordance with current NGB procedures for conservation projects.

#### 9.1.1 Funding Sources

Implementation of this INRMP is subject to the availability of annual funding. The installation requests project validation and funding through the Status Tool for the Environmental Program (STEP) completed by the EPM. Funding sources for projects can be grouped into three main categories by source: federal NGB funds, other federal funds, and non-federal funds. Each is discussed in the following subsections.

Where projects identified in the plan are not implemented due to lack of funding or other compelling circumstances, the installation will review the goals and objectives of this INRMP to determine whether adjustments are necessary. The following discussion of funding options is not all-inclusive of funding sources. Since many funding sources rely on a variety of grant programs, award criteria and amounts can change considerably from one year to another. Funding through grant programs can occur on a one-time, annual, or multi-year basis.

##### 9.1.1.1 National Guard and Arizona Army National Guard Funding

Funding from the NGB/AZARNG will be required to implement the INRMP over the next 5 years. NGB is the primary source of funding to support the management of natural resources at Camp Navajo through a Master Cooperative Agreement with the State of Arizona. Only projects approved in STEP receive funding. This budget is managed by the EPM.

The NGB provides funding for facilities maintenance in support of the AZARNG CFMO. The CFMO is involved in planning, scheduling, and oversight of roads and trails maintenance, vegetation

management, pest management implementation, facilities infrastructure, construction, and master planning, all of which impact, and are impacted by, the natural resources management program.

#### 9.1.1.2 Other Federal Funds

Cooperative agreements may be entered into with states, local governments, non-governmental organizations, and individuals for the improvement of natural resources or to benefit natural and historical research on federally owned training sites. Upon written concurrence of the Camp Navajo INRMP by the USFWS and AGFD, these agencies become signatory cooperators of this plan. As such, the potential for access to matching funds programs and services offered by these agencies will be available.

Program initiatives under the CWA provide funding through several sources. The EPA Office of Water sponsors those projects related to the CWA. Available funding may support programs such as cost-sharing for overall water-quality management (e.g., monitoring, permitting, and enforcement), lake water quality assessments and mitigation measures, and implementation of non-point source pollution control measures. Refer to the EPA's Office of Water funding website for potential sources of funding ([www.epa.gov/cwsrf/learn-about-clean-water-state-revolving-fund-cwsrf#assistance](http://www.epa.gov/cwsrf/learn-about-clean-water-state-revolving-fund-cwsrf#assistance)).

The Legacy Resource Management Program provides financial assistance to DoD efforts to conserve natural and cultural resources on federal lands. Legacy projects could include regional ecosystem management initiatives, habitat preservation efforts, archeological investigations, invasive species control, and/or flora or fauna surveys. Legacy funds are awarded based on national visibility. Project proposals are submitted directly to the Legacy Resource Management Program ([www.dodlegacy.org/legacy/intro/about.aspx](http://www.dodlegacy.org/legacy/intro/about.aspx)).

The NRCS manages the Federal Domestic Assistance Program (Plant Materials for Conservation), which assembles, evaluates, selects, releases, and introduces into commerce and promotes the use of new, improved plant materials for soil, water, and related resource conservation and environmental improvement programs (<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs>).

#### 9.1.1.3 Non-Federal Funds

Other funding sources that could be considered include the Public Lands Day Program, which coordinates volunteers to improve the public lands they use for recreation, education, and enjoyment, and the National Environmental Education and Training Foundation, which manages, coordinates, and generates financial support for the program.

### **9.1.2 Priorities and Scheduling**

The STEP database will be used to validate projects and determine funding priority. Projects need to be funded consistently with timely execution to meet future deadlines. Projects are generally prioritized with respect to compliance. Highest priority projects are projects related to recurring or current compliance, and these are generally scheduled earliest.

Recurring requirements include projects and activities needed to cover the recurring administrative, personnel, and other costs necessary to meet applicable compliance requirements (federal and state laws, regulations, Executive Orders [EOs], and DoD policies) or which are in direct support of the military mission. Recurring costs include manpower, training, supplies, hazardous waste disposal, operating

recycling activities, permits and fees, testing, monitoring and/or sampling and analysis, reporting and record keeping, maintenance of environmental conservation equipment, and compliance self-assessments.

Current compliance includes projects and activities that are needed because an installation is currently or will be out of compliance if the determined projects or activities are not implemented in the current program year. Examples include:

- Environmental analyses, monitoring, and studies required to assess and mitigate potential effects of the military mission on conservation resources;
- Planning documents;
- Baseline inventories and surveys of natural and cultural resources (historical and archaeological sites);
- Biological assessments, surveys, or habitat protection for a specific special status species;
- Mitigation to meet existing regulatory permit conditions or written agreements;
- Wetland delineations in support of subsequent jurisdictional determinations and consequent permitting;
- Efforts to achieve compliance with requirements that have deadlines that have already passed; and
- Initial documenting and cataloging of archaeological materials.

Maintenance requirements include those necessary projects and activities that are not currently out of compliance but shall be out of compliance if projects or activities are not implemented in time to meet an established deadline beyond the current program year. Examples include:

- Compliance with future requirements that have deadlines;
- Conservation and GIS mapping to be in compliance;
- Efforts undertaken in accordance with non-deadline-specific compliance requirements of leadership initiatives;
- Wetlands enhancement in order to achieve the EO for “no net loss” or to achieve enhancement of existing degraded wetlands; and
- Public education programs that educate the public on the importance of protecting archaeological and natural resources.

Lower priority projects include those that enhance conservation resources of the installation mission or those that are needed to address overall environmental goals and objectives but are not specifically required under regulation or EO and are not of an immediate nature. These projects are generally funded after those of higher priority are funded. Examples include:

- Community outreach activities, such as “Earth Day” and “Historic Preservation Week” activities;
- Educational and public awareness projects, such as interpretive displays, oral histories, nature trails, wildlife checklists, and conservation teaching materials;
- Biological assessments, surveys, or habitat protection for a species;

- Restoration or enhancement of cultural or natural resources when no specific compliance requirement dictates a course or timing of action;
- Reinternment of Native American remains on DoD-managed or controlled land; and
- Management and execution of volunteer and partnership programs.

### **9.1.3 Staffing**

The Camp Navajo Natural Resources Office is staffed with NRMs who are employed by the AZDEMA and supervised by the Conservation Programs manager.

### **9.1.4 Personnel Training**

The Wildlife Society, National Military Fish and Wildlife Association, Society of American Foresters, Society for Ecological Restoration, and Society of Range Management are among the professional societies applicable to meeting the needs of Camp Navajo's NRMs. Membership in these societies is encouraged, as they provide some of the best scientific publications in their professions. Attending the meetings of these societies provides excellent opportunities to communicate with fellow professionals, as well as maintain professional standards. The AZARNG natural and cultural resources staff will send personnel to each ARNG approved course, such as:

- National Environmental Workshop;
- SRP workshop;
- NEPA courses; and
- GIS training.

Other conferences/workshops will be evaluated for their usefulness, and decisions to send personnel will be made based on the appropriateness to ongoing projects and funding availability by the EPM. Especially useful options include National Military Fish and Wildlife Association workshops, the North American Natural Resources Conference, the United States Army SRP workshop, GIS and GPS workshops, environmental communications, conferences on forest management, NGB courses/conferences, and PIF workshops.

### **9.1.5 Outside Assistance**

Implementation of this INRMP will require limited assistance from INRMP partners. The USFWS and AGFD are required to cooperate in preparation and implementation of the INRMP under the Sikes Act, amended under the SAIA. Other partners include DoD agencies, federal and state agencies, universities, contractors, and private citizens.

## **9.2 INRMP REVIEWS**

### **9.2.1 Review for Operation and Effect**

The INRMP will be reviewed for operation and effect to determine if the INRMP is being implemented to meet the requirements of the SAIA and contributing to the conservation and rehabilitation of natural resources at Camp Navajo, no less than every five years (Sikes Act SEC. 101. 16 USC 670a (b) (2)). The review will be conducted by the three cooperating parties to include the commander responsible for the INRMP, USFWS, and AGFD. These agencies have technical representatives who will complete the review.

The review for operation and effect will either conclude that the INRMP is meeting the intent of the SAIA and it can be updated and implementation can continue or that it is not effective in meeting the intent of the SAIA to conserve natural resources while providing for no net loss in training capability and it must be revised. The conclusion of the review will be documented in a jointly executed memorandum, meeting minutes, or in some other way that reflects mutual agreement. If only minor updates are needed, they will be done in a manner agreed to by all parties. The updated INRMP will be reviewed by the local USFWS office, USFWS regional director, local AGFD office, and AGFD director. Once concurrence letters or signatures are received from USFWS regional director and the AGFD director, the INRMP will continue to be implemented. A new NEPA review is not necessary for an update and the continued implementation of an existing INRMP that has previously undergone NEPA review. In this case, an Environmental Checklist and Record of Environmental Consideration citing the previous NEPA document is needed.

If a review of operation and effect concludes that an INRMP must be revised, there is no set time to complete the revision. The existing INRMP remains in effect until the revision is complete and USFWS and AGFD concurrence on the INRMP is received. The AZARNG will endeavor to complete such revisions within 18 months depending upon funding availability. Revisions to the INRMP will go through a more detailed review process similar to development of the initial INRMP to ensure AZARNG military mission, USFWS, and AGFD concerns are adequately addressed and the plan meets the intention of the SAIA. Revisions will usually require a new NEPA analysis. An EA will be completed as part of the revision process, if determined by NGB to be necessary.

### **9.2.2 Annual Agency Reviews and Coordination**

Per DoD policy, the AZARNG will review the INRMP annually in cooperation with the USFWS and AGFD. The AZARNG will invite the USFWS Regional Office, the USFWS local field office, the AGFD, and NGB on an annual basis to attend a meeting at Camp Navajo to review previous year INRMP implementation and discuss implementation of upcoming programs and projects. Invitations will either be by letter or email. Attendance is at the option of those invited, but at minimum, the USFWS local field office and AGFD are expected to attend. The meeting will be documented with an agenda, meeting minutes, and sign-in roster of attendees.

The need for updates or revisions will be discussed at the annual meeting. If minor updates are needed, the requesting party will initiate the updates, and after agreement of all three parties, they will be added to the INRMP. If it is determined that major changes are needed, all three parties will provide input and an INRMP revision and associated NEPA review will be initiated, with the AZARNG acting as the lead coordinating agency. The annual meeting will be used to help expedite the more formal review for operation and effect. If all parties agree and document their mutual agreement, the requirement to review the INRMP for operation and effect will have been fulfilled.

If not already determined in previous annual meetings, by the fourth year of annual reviews a determination will be jointly made to continue implementation of the existing INRMP with minor updates or to proceed with a revision. If the parties believe that the annual reviews have not been sufficient to evaluate operation and effect and they cannot determine if the INRMP implementation should continue or be revised, a formal review for operation and effect will be initiated. The determination on how to proceed with INRMP implementation or revision will be made after the parties

have had time to complete this review. In accordance with the *Army Guidance for Implementation of the SAIA* dated 25 May 2006, annual reviews shall at minimum verify that:

- All “must fund” projects and activities have been budgeted for and implementation is on schedule;
- All required trained natural resources positions are filled or are in the process of being filled;
- Projects and activities for the upcoming year have been identified and included in the INRMP (an updated project list does not necessitate revising the INRMP);
- All required coordination has occurred;
- All significant changes to the installation’s mission requirements or its natural resources have been identified;
- The INRMP goals and objectives are still valid; and
- No net loss of training capability has occurred due to implementation of the INRMP in accordance with the SAIA.

As part of the annual review, the AZARNG will specifically:

- Invite feedback from the USFWS and AGFD on the effectiveness of the INRMP;
- Inform the USFWS and AGFD which INRMP projects and activities are required to meet current natural resource compliance needs; and
- Document specific INRMP action accomplishments from the previous year.

Information for the annual reviews comes from the AZARNG environmental staff, Camp Navajo military leadership, cooperating agencies, project files, and Army Environmental Database-Environmental Quality as applicable. Natural resource data and program and project information are available to cooperating agencies. They may request to see project folders or to have a site visit to view natural resources projects in progress at any time. Annual review results will be available to the public and can be requested through the EMO at Camp Navajo.

### **9.2.3 Tribal Reviews and Coordination**

As the AZARNG intends to maintain regular and consistent consultation with affiliated Tribes, the AZARNG has endeavored to confirm which types of projects they are interested in participating in through consultation. The AZARNG’s installations contain an abundance of prehistoric archaeological sites, historic structures, and modern buildings. Prior to the start of any AZARNG project, a thorough Class I background search is conducted to identify which types of sites, if any, are located in the project area, within 250 meters of the project area, and within 1 mile of the project area. Frequent project categories include military training exercises; maintenance of modern and historic buildings such as latrine modernizations and roof replacements; the installation of fire suppression systems; utility repair and replacement such as maintenance on water and sewer lines; road and trail maintenance; remediation activities to mitigate or monitor past environmental damage; and forest management, including timber sales, tree thinning, and prescribed burns.

Tribes may be interested in consulting upon the following categories:

- Any project taking place near known prehistoric archaeological sites;

- Any project taking place inside or near Historic-period structures;
- Any project taking place inside or near modern, non-Historic-period structures;
- Any project involving ground disturbance;
- Only projects involving ground disturbance near known prehistoric archaeological sites; and
- Any project, even those not involving ground disturbance and not near any known prehistoric archaeological site.

Until directed otherwise, the AZARNG will send consultation correspondence for every upcoming project according to the instructions currently posted online on the government-to-government website.

### 9.3 MONITORING INRMP IMPLEMENTATION

Monitoring of INRMP implementation is necessary to facilitate the legal requirements of the SAIA to review for operation and effect. This section lists the implementation requirements given in the *DA Guidance for Implementation of the SAIA*, dated 25 May 2006. An INRMP is considered implemented in regard to the SAIA if the requirements in the Army guidance are met. These SAIA implementation criteria do not necessarily measure the effectiveness of an INRMP in facilitating a mission accomplishment while conserving natural resources. Camp Navajo INRMP implementation will be monitored for meeting the legal requirements of the SAIA as well as for other mission and biological measures of effectiveness. The ultimate successful implementation of this INRMP is realized in no net loss in the capability of Camp Navajo training lands to support the military mission while at the same time conserving and rehabilitating natural resources found on the training site.

Much of the INRMP implementation is done through internal coordination in regard to training site operations and land use decision-making. This type of implementation cannot be measured by project implementation or funding but is evidenced by such things as the ability to continually train, sustainable land use, ongoing regulatory compliance, retention of species diversity, retention of surface water quality, and the acknowledgement of sustainable natural resources management by partnering conservation agencies and other interested organizations and individuals. In order to monitor and evaluate the effectiveness of the INRMP implementation, the following will be reviewed as applicable and discussed within the context of the annual review and/or a formal review of operation and effect:

- Impacts to/from the military mission;
- Conservation program budget;
- Staff requirements;
- Program and project implementation;
- Trends in species and habitat diversity as evidenced by recurring biological surveys, land use changes, and opinions of NRMs;
- Compliance with regulatory requirements; and
- Feedback from military trainers, the USFWS, the AGFD, and other stakeholders.

Some of these areas may not be looked at every year due to lack of data or pertinent information. The effectiveness of the INRMP as a mission-enabling conservation tool will be decided by mutual

agreement of the USFWS, AGFD, and AZARNG during annual reviews and/or reviews for operation and effect.

### 9.3.1 Monitoring Natural Resource Management

To inform evaluation and discussion of impacts to/from the military mission, program and project implementation, and trends in species and habitat diversity, provision for monitoring and surveys have been included as part of INRMP implementation. **Appendix G** (INRMP Project Matrix) lists approximately 19 monitoring and survey projects to be conducted at specified program dates or time intervals to evaluate the effectiveness and success of or to meet the management goals and objectives presented in Section 8, summarized below:

- Forest vegetation treatment effectiveness and success;
- Determine military impacts on natural resources and restoration needs for training areas;
- Fencing of and community restoration within aspen stands;
- Weed management and control;
- Spring and wetland restoration/protection; and,
- Surveys for various habitats and species

Parameters of progress and success established in other previous INRMP documents may be re-evaluated for their usefulness or effectiveness in measuring progress toward current management goals and objectives. In addition, Camp Navajo will partner with the USFWS and the AGFD to develop methodologies for monitoring post-treatment vegetation changes in MSO habitat, additional parameters of success for management goals and objectives, and triggers for implementing adaptive management to modify resource management methods based on review of monitoring and survey data. Treatments completed, monitoring and survey data, reviews of progress toward objectives and goals, and discussion of adaptive management triggers will be reviewed and discussed during the annual agency reviews in cooperation with the USFWS, AZARNG, AGFD, and other invited parties.



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**SECTION 10 REFERENCES**

Akers, J.P. 1962. Relation of Faulting to the Occurrence of Groundwater in the Flagstaff Area, Arizona. Geological Survey Professional Paper 450-B, Article 39.

Akers, J.P., M.E. Cooley, and P.E. Dennis. 1964. Synopsis of Groundwater Conditions on the San Francisco Plateau near Flagstaff, Coconino County, Arizona. United States Geological Survey Water Resources Investigation Open File Report 81-914.

Arizona Army National Guard (AZARNG). 1993. Environmental Assessment for the Reuse of Navajo Depot Activity by the National Guard of Arizona.

\_\_\_\_\_. 2011. 2010–2011 Winter Raptor Surveys on Camp Navajo. Arizona Army National Guard, Bellemont.

Arizona Army National Guard (AZARNG). 2012. Camp Navajo Land Vegetation Analysis.

\_\_\_\_\_. 2013a. Final ACUB Proposal. Camp Navajo, Bellemont, Arizona. 2013.

\_\_\_\_\_. 2013b. Integrated Pest Management Plan for the Arizona Army National Guard (IPMP). April 2013.

\_\_\_\_\_. 2017. Camp Navajo Vision Plan. Jacobs.

\_\_\_\_\_. 2019. Camp Navajo SPCCP. Camp Navajo, Bellemont, Arizona. August 2019.

Arizona Department of Environmental Quality (ADEQ). 2017. Arizona Hazardous Waste Management Act Permit. EPA ID Number AZ7 213 820 635—Place ID 3051, License LTF Number 62926. 27 January.

Arizona Department of Transportation (ADOT). 2012. Erosion and Pollution Control Manual. Transmitted to AZARNG via the Internet. <https://www.azdot.gov/business/engineering-and-construction/roadway-engineering/roadside-development/erosion-and-pollution-control-manual>. Accessed 20 November 2018

Arizona Game and Fish Department (AGFD). 2001. *Idionycteris phyllotis*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 3pp.

\_\_\_\_\_. 2002. *Aquila chrysaetos*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 4pp.

\_\_\_\_\_. 2003a. *Accipiter gentilis*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 4pp.

\_\_\_\_\_. 2003b. *Microtis mexicanus navajo*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 6pp.

- \_\_\_\_\_. 2006. Conservation Assessment and Strategy for the Bald Eagle in Arizona-Draft. Nongame and Endangered Wildlife Program Technical Report 173. Phoenix, Arizona. 81pp.
- \_\_\_\_\_. 2011a. *Haliaeetus leucocephalus*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 9pp.
- \_\_\_\_\_. 2011b. *Myotis evotis*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 7pp.
- \_\_\_\_\_. 2011c. *Myotis occultus*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 7pp.
- \_\_\_\_\_. 2011d. *Myotis thysanodes*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 6pp.
- \_\_\_\_\_. 2011e. *Myotis volans*. Unpublished draft abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix. 5pp.
- \_\_\_\_\_. 2012. Arizona's State Wildlife Action Plan: 2012–2022. Arizona Game and Fish Department, Phoenix, Arizona.
- \_\_\_\_\_. 2018. Arizona's Federal and State Species of Greater Conservation Need; Ranks and Definitions. Transmitted to ARNG via the Internet. ([www.habimap.org](http://www.habimap.org)). Accessed 2 May 2018.
- Bailey, R.G. 1995. Description of the Ecoregions of the United States. Transmitted to AMEC Earth and Environmental via the Internet. [http://www.fs.fed.us/land/ecosysmgmt/ecoreg1\\_home.html](http://www.fs.fed.us/land/ecosysmgmt/ecoreg1_home.html). Accessed 6 July 2009.
- Barbour M.G., J.H. Burk, and W.D. Pitts. 1987. Terrestrial Plant Ecology. The Benjamin/Cummings Publishing Company, Inc., Menlo Park, California.
- Bayless, M., and M. Ingraldi. 2004. Bald Eagle Use of Camp Navajo During the Winter of 2002/2003. Research Branch, Arizona Game and Fish Department, Phoenix.
- Bayless, M., and M. Ingraldi. 2005. Monitoring Winter Raptors on Camp Navajo. Transmitted to AMEC Earth & Environmental via the Internet. [http://www.gf.state.az.uc/w\\_c/research\\_winter\\_raptors.shtml](http://www.gf.state.az.uc/w_c/research_winter_raptors.shtml). Accessed 25 May 2005.
- Bayless, M., and M. Ingraldi. 2006. Estimation of Tassel-eared Squirrel Abundance on Camp Navajo prior to a Forest Restoration Treatment. Research Branch, Arizona Game and Fish Department, Flagstaff.
- Bayless, M., M.F. Ingraldi, and S.T. Partridge. 2007. Winter Bald Eagle Use of Camp Navajo and Northern Arizona. 2003–2005. Arizona Game and Fish Department, Research Branch, Phoenix.
- Brown, D. E. 1989. *Arizona Game Birds*. University of Arizona Press, Tucson.

- Brown, D. (Ed.). 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. University of Utah Press, Salt Lake City. 342 pp.
- Center for Environmental Management of Military Lands (CEMML). 1997. *Integrated Natural Resources Management Plan 1997–2001, Camp Navajo*. Colorado State University, Fort Collins. 188 pp.
- Corman, T. E., and C. Wise-Gervais, editors. 2005. *Arizona Breeding Bird Atlas*. University of New Mexico Press, Albuquerque. x + 636 pp.
- Covington, W. W., and M.M. Moore. 1994. Southwestern Ponderosa Pine Forest Structure and Resource Conditions: Changes Since Euro-American Settlement. In: *Journal of Forestry* 92: 39–47.
- Dargan, C.M. 1991. *Roost Site Characteristics of Bald Eagles Wintering in North-Central Arizona*. Master's Thesis. Northern Arizona University. 73 pp.
- Diamond, J. M. 2016. 2016 Summary Report: Forest Dwelling Bats Mark and Recapture Study on Camp Navajo, Arizona. Arizona Game and Fish Department, Wildlife Contracts Branch, Phoenix.
- Douglas, P.P., R.B. Shaw, E.L. Painter, T.C. Wager, N.E. Hastings, D.L. Hazlett, R.J. Krohn, G.C. Lilburn, J.R. Morrison, C.A. Papolizio, K.A. Schulz, and M.B. Tomecek. 1993. *Botanical Survey Report of the 11th Brigade Signal Corps Sites, Arizona*. CEMML Floristic Laboratory. Department of Range Science, Colorado State University, Fort Collins.
- Drickamer, L.C., and R.J. Martz. 2006. 2003–2005 Gunnison's Prairie Dogs at Camp Navajo, Bellemont, Arizona. Northern Arizona University, Flagstaff, Arizona.
- Ebasco Environmental (Ebasco). 1990. *Enhanced Preliminary Assessment Report: Navajo Depot Activity Bellemont, Arizona*. Lakewood, Colorado.
- Environmental Protection Agency (EPA). 2017. *Wetland Regulatory Authority—Regulatory Requirements*. Wetland Fact Sheet EPA843-F-04-001 Office of Water. Transmitted to ARNG via the Internet. [http://www.epa.gov/owow/wetlands/pdf/reg\\_authority\\_pr.pdf](http://www.epa.gov/owow/wetlands/pdf/reg_authority_pr.pdf). Accessed 29 June 2017.
- Frary, V.F., V. Horncastle, and M. Ingraldi. 2009. *Squirrel and Songbird Density on Camp Navajo, Bellemont, Arizona*. First Progress Report. Arizona Game and Fish Department, Research Branch, Phoenix.
- Fulé, P.Z., M.M. Moore, and W.W. Covington. 1995. *Changes in Ponderosa Pine-Gambel Oak Forest Structure Following Fire Regime Disruption in Northern Arizona: Camp Navajo Old-Growth Forest Study*. Unpublished report, Northern Arizona University School of Forestry, Flagstaff. 52 pp.
- Fulé, P.Z., W.W. Covington, and M.M. Moore. 1997. *Determining Reference Conditions for Ecosystem Management of Southwestern Ponderosa Pine Forests*. *Ecological Applications*, 7(3), 1997, pp 895-908 © 1997 by the Ecological Society of America.

- Gist, J.A., R.N. Gwinn, and J. M. Diamond. 2014. Monitoring Abert's Squirrel Density on Camp Navajo, Bellemont, Arizona. Arizona Game and Fish Department, Wildlife Contracts Branch, Phoenix.
- Glinski, R.L. 1998. *The Raptors of Arizona*. Arizona Game and Fish Department and University of Arizona Press, Tucson. 220 pp.
- Gwinn, R.N., J.M. Diamond, D.P. Sturla, and E.H. Scobie. 2015. 2015 Summary Report: Response in Songbird Abundance to Forest Treatments on Camp Navajo, Arizona. Arizona Game and Fish Department, Wildlife Contracts Branch, Phoenix.
- Hall, R.S., R.L. Glinski, D.H. Ellis, J.M. Ramakka, and D.L. Base. 1988. Ferruginous Hawk. Pp. 111-118 in R.L. Glinski et al., eds. Proceedings of the southwest raptor management symposium and workshop. Natl. Wildl. Fed. Scien. Tech. Ser. No. 11.
- Harris Environmental Group, Inc [HEG]. 2001. Biological Assessment, Camp Navajo, Arizona. Prepared for the Arizona Army National Guard, Phoenix. 57pp.
- \_\_\_\_\_. 2005a. Vegetation Survey of OB/OD NAAD 02 area, Camp Navajo, Arizona. Prepared for the Arizona Army National Guard, Phoenix.
- \_\_\_\_\_. 2005b. Biological Assessment of OB/OD NAAD, Camp Navajo, Arizona. Prepared for the Arizona Army National Guard, Phoenix.
- Hoffmeister, D.F. 1986. *Mammals of Arizona*. University of Arizona Press and the Arizona Game and Fish Department, Phoenix.
- Horncastle, V., M. Bayless, and M. Ingraldi. 2005. Forest-Dwelling Bat Responses to Forest Restoration: Spring 2005 Progress Report, Camp Navajo, Bellemont, Arizona. Research Branch, Arizona Game and Fish Department, Flagstaff.
- Horncastle, V., V. Frary, and M. Ingraldi. 2007. 2005 Progress Report: Forest-Dwelling Bat Responses to Forest Restoration, Camp Navajo, Bellemont, Arizona. Arizona Game and Fish Department, Phoenix.
- \_\_\_\_\_. 2009. First Draft 2008 Progress Report: Forest-Dwelling Bat Responses to Forest Restoration, Camp Navajo, Bellemont, Arizona. Arizona Game and Fish Department, Phoenix.
- Horncastle, V.J., S.E. Sesnie, B.G. Dickson, and J.M. Rundall. 2011. Determining the Threat of Wildfire to Camp Navajo: Existing Forest Conditions and Fire Behavior. The Lab of Landscape Ecology and Conservation Biology, School of Earth Sciences and Environmental Sustainability, Northern Arizona University, Flagstaff. 38pp.
- Ingraldi, M. F. 2000. Northern Goshawk Inventory on Camp Navajo, Bellemont, Arizona. Contract #IGAM7-0041. Research Branch, Wildlife Management Division, Arizona Game and Fish Department, Flagstaff. 8 pp.

- Joshi, Parbin K. 2009. Night Roosts of Bald Eagles (*Haliaeetus leucocephalus*) Wintering in Northern Arizona. Northern Arizona University, Flagstaff. 95pp.
- Joy, S.M., R.T. Reynolds, and D.G. Leslie. 1994. Northern Goshawk Broadcast Surveys: Hawk Response Variables and Survey Costs. In: *Studies in Avian Biology* 16:24-31.
- Kennedy, P.L. and D.W. Stahlecker. 1991. Broadcast Calls of the Northern Goshawk: Their Effectiveness and Their Use in Inventory and Long-term Monitoring Programs. Report prepared for the United States Forest Service, Southwestern Region. Purchase order 43-8371-0-0583.
- Lesh, T., and S. Rosenstock. 1999. Baseline Wildlife Study on Forest Restoration Treatment Area, Camp Navajo, Bellemont, Arizona. Contract # #M7-0041. Arizona Game and Fish Department, Research Branch, Phoenix. 23pp.
- Loeser, M.R., and T.D. Sisk. 2005. Final Report, Camp Navajo Rangeland Monitoring and Implementation of an Ungulate Enclosure Network. Center for Environmental Sciences and Education, Northern Arizona University, Flagstaff.
- Luedeker, Lee. 1997. Wildlife Biologist, Arizona Game and Fish Department. Personal communication with Terri Hicks-Anderson, January, Flagstaff.
- Lynn, J. 2010. Northern Goshawk Survey 2010. Camp Navajo, Arizona Army National Guard, Bellemont.
- Mauney, M., D. Martel, A.A. Lee, M. Bishop, T. Wilson. 2001. Delineation of Wetlands and other Regulated Waters of Camp Navajo, Arizona. United States Army Engineer Research and Development Center, Waterways Experiment Station, CEERD-EE-W. 12 pp.
- McCarty, K.M., K. Licence, and K.V. Jacobson. 2018. Arizona Bald Eagle Management Program 2018 Summary Report. Technical Report 321. Arizona Game and Fish Department.
- McHugh, J.P. 1996. An Evaluation of the United States Army's Satellite Imagery Based Site Selection Process. M.S. Thesis, Sam Houston State University, Huntsville, Texas.
- Montgomery, E.L., and R.H. Dewitt. 1974. Hydrogeology of Sources of Municipal Water, Flagstaff, Arizona. Abstracts with Programs, Volume 6, Number 5. Geological Society of America. Boulder, Colorado.
- Moore, M.M., and W.W. Covington. 1998. Biological Assessment and Evaluation for Camp Navajo Forest Ecosystem Restoration Project. Ecological Restoration Program, School of Forestry, Northern Arizona University, Flagstaff. 82pp.
- Nabel, Mark. 2004. Northern Goshawk Inventory of Volunteer Mountain PFA. Internal Report. Camp Navajo, Bellemont, Arizona. 6pp.
- \_\_\_\_\_. 2005. Summary of Known Information for Northern Goshawks on Camp Navajo and Adjacent Forest Service Land. Arizona Army National Guard, Bellemont.

- Navajo Army Depot Activity (NADA). 1987a. Land Management Plan Navajo Depot Activity Bellemont, Arizona.
- \_\_\_\_\_. 1987b. Fish and Wildlife Management Plan Navajo Depot Activity Bellemont, Arizona.
- National Oceanic and Atmospheric Administration. (NOAA). 2014. NOAA Technical Memorandum NWS WR-273. [https://www.weather.gov/media/wrh/online\\_publications/TMs/TM-273.pdf](https://www.weather.gov/media/wrh/online_publications/TMs/TM-273.pdf).
- Northern Arizona University [NAU]. 1996. Interagency Service Agreement Between Arizona Department of Emergency and Military Affairs and Northern Arizona University, Flagstaff.
- \_\_\_\_\_. 2012. Interagency Service Agreement Between Arizona Department of Emergency and Military Affairs and Northern Arizona University. Camp Navajo Land Vegetation Analysis. Flagstaff, Arizona.
- Partridge, S.T., M. Bayless, and M. Ingraldi. 2007. Snag Inventory: 2005 Progress Report, Camp Navajo, Bellemont, Arizona. Research Branch, Arizona Game and Fish Department, Flagstaff.
- Rabe, Mike. 1997. Research Biologist. Arizona Game and Fish Department. Personal Communication with Terri Hicks-Anderson.
- Rabe, M.J., T.E. Morrell, H. Green, J.C. DeVos Jr., and C.R. Miller. 1999. Characteristics of Ponderosa Pine Snag Roosts Used by Reproductive Bats in Northern Arizona. *Journal of Wildlife Management* 62(2): 612-621.
- Scott, P.W. 1974. Hydro-geological-Structural Analysis of the Woody Mountain Well Field Area with Geophysical Interpretations, Coconino County, Arizona. Unpublished Master's Thesis, Northern Arizona University, Flagstaff.
- Springer, Judith D., Mark L. Daniels, Joseph E. Crouse, David W. Huffman. 2011. INRMP Required Species Monitoring: Targeted Floristic Survey of Portions of Camp Navajo, Bellemont, Arizona (Volunteer Canyon, wetlands throughout the base, road to Volunteer Mountain, and proposed firing range). Ecological Restoration Institute. Northern Arizona University, Flagstaff. 30pp.
- Stephens, S.L., Agee, J.K., Fule, P.Z., North, M.P., Romme, W.H., Swetnam, T.W., and Turner, M.G. 2013. Managing Forests and Fire in Changing Climates. In *Science*, 342(6154), 41-42.
- SWCA Environmental Consultants (SWCA). 2015. Planning-Level Surveys of Wetland and Other Waters of the United States, Camp Navajo, Arizona. 7pp.
- Texas Regional Institute for Environmental Studies (TRIES). 1996. Final Report: Floral and Faunal Inventories, Camp Navajo, Arizona. Sam Houston State University, Huntsville, Texas. 83 pp.
- United States Army Engineer Research and Development Center, Waterways Experiment Station (WES). 2001. Delineation of Wetlands and Other Regulated Waters of Camp Navajo, Arizona.

United States Army Toxic and Hazardous Materials Agency (USATHAMA). 1979. Installation Assessment of Navajo Depot Activity. Report No. 137. Aberdeen Proving Ground, Maryland.

United States Census Bureau (USCB). 2017. 2010–2015 American Community Survey. Transmitted to AMEC Earth & Environmental via the Internet. [http://factfinder.census.gov/home/saff/main.html?\\_lang=en](http://factfinder.census.gov/home/saff/main.html?_lang=en). Accessed 25 February 2017.

United States Department of Agriculture, Natural Resource Conservation Service (NRCS). 2000. Soil Survey of Camp Navajo, Coconino County, Arizona. A Special Report.

United States Department of Agriculture, Four Forest Restoration Initiative (USDA 4FRI). 2010. BMP Documents & CNF Forest Plan Consistency Check <https://ffri.basecamphq.com/projects/5011578-ls-meeting-notes-and-timelines/posts/39616259/comments>.

United States Fish and Wildlife Service (USFWS). 1993. Endangered and Threatened Wildlife and Plant: Final Rule to list the Mexican Spotted Owl as a Threatened Species. Federal Register 58:14248-14271.

\_\_\_\_\_. 1995a. Determination of Critical Habitat for the Mexican Spotted Owl; final rule. Federal Register 60: 29913-29951.

\_\_\_\_\_. 1995b. Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*) Vols. 1 & 2. USFWS New Mexico Field Office, Albuquerque. 169 pp.

\_\_\_\_\_. 2004. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl: Final Rule. Federal Register 69(168): 53182-53230.

\_\_\_\_\_. 2012. Final Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*), First Revision. United States Fish and Wildlife Service, Albuquerque. 413pp.

Waddell, R.B., R.A. Ockenfels, and S.R. Boe. 2005. Management Recommendations for Pronghorn on Camp Navajo, Arizona Army National Guard, Northern Arizona. Arizona Game and Fish Department, Research Branch, Phoenix.

Wakeling, B.F., and T.D. Rogers. 1995. Winter Habitat Relationships of Merriam's Turkeys Along the Mogollon Rim, Arizona. Technical Report 16. Arizona Game and Fish Department, Phoenix. 41pp.

Ward, J.P., A.B. Franklin, S.E. Rinkevich, and F. Clemente. 1995. Distribution and Abundance of Mexican Spotted Owls. Chapter 1 in Recovery Plan for the Mexican Spotted Owl: Vol. II. United States Fish and Wildlife Service, Albuquerque, New Mexico.

Westerling, A.L., A. Gershunov, T.J. Brown, D.R. Cayan, and M.D. Dettnger. 2003. Climate and Wildfire in the Western United States American Meteorological Society.

Wilcox, R.L., and S. T. Partridge. 2007. Amphibian Surveys on Camp Navajo Army Depot, Bellemont, Arizona 2006. Research Branch, Arizona Game and Fish Department, Flagstaff, Arizona.



Wilkinson, Randall W. 2000. Water Resources of Bellemont Park. Northern Arizona University, Flagstaff. Final.

Wilkinson, Randy. 2013. Camp Navajo Remediation Specialist. Personal Communication.

Wolfe, E.W., G.E. Ulrich, R.F. Holm, R.B. Moore, and C.G. Newhall, 1987. Geologic Map of the Central Part of the San Francisco Volcanic Field, North-central Arizona. United States Geological Survey, Miscellaneous Field Studies, Map MF-1959.

Young, E. and A. Springer. 2005. Frost Depth and Frost Heave at Camp Navajo: Year 2. Northern Arizona University. Final.

Zylo, Mary. 2012. Bald Eagles (*Haliaeetus leucocephalus*) Wintering in Northern Arizona Select Perches Based on Food Availability, Visibility and Cover. Northern Arizona University, Flagstaff. 71pp.

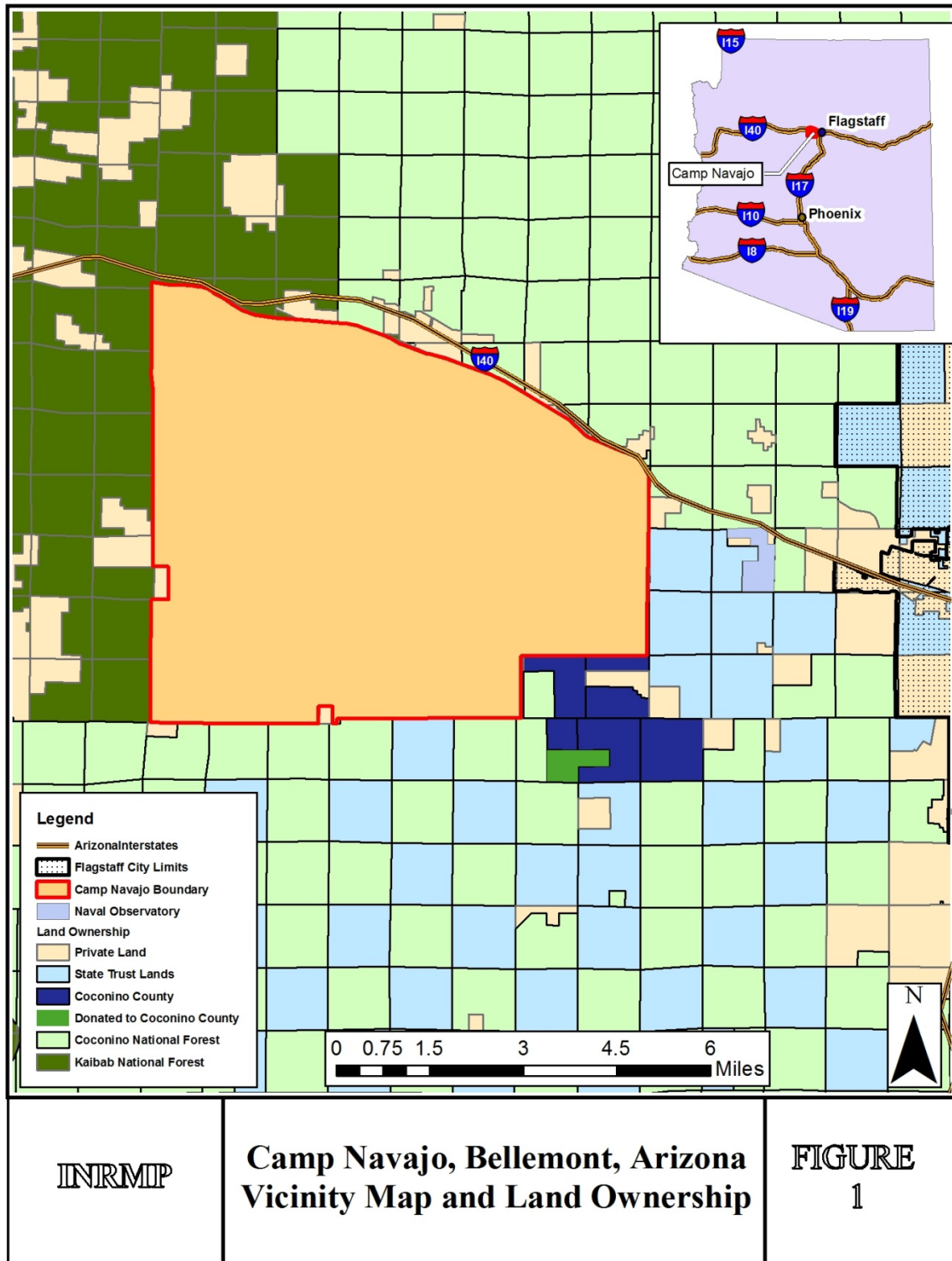
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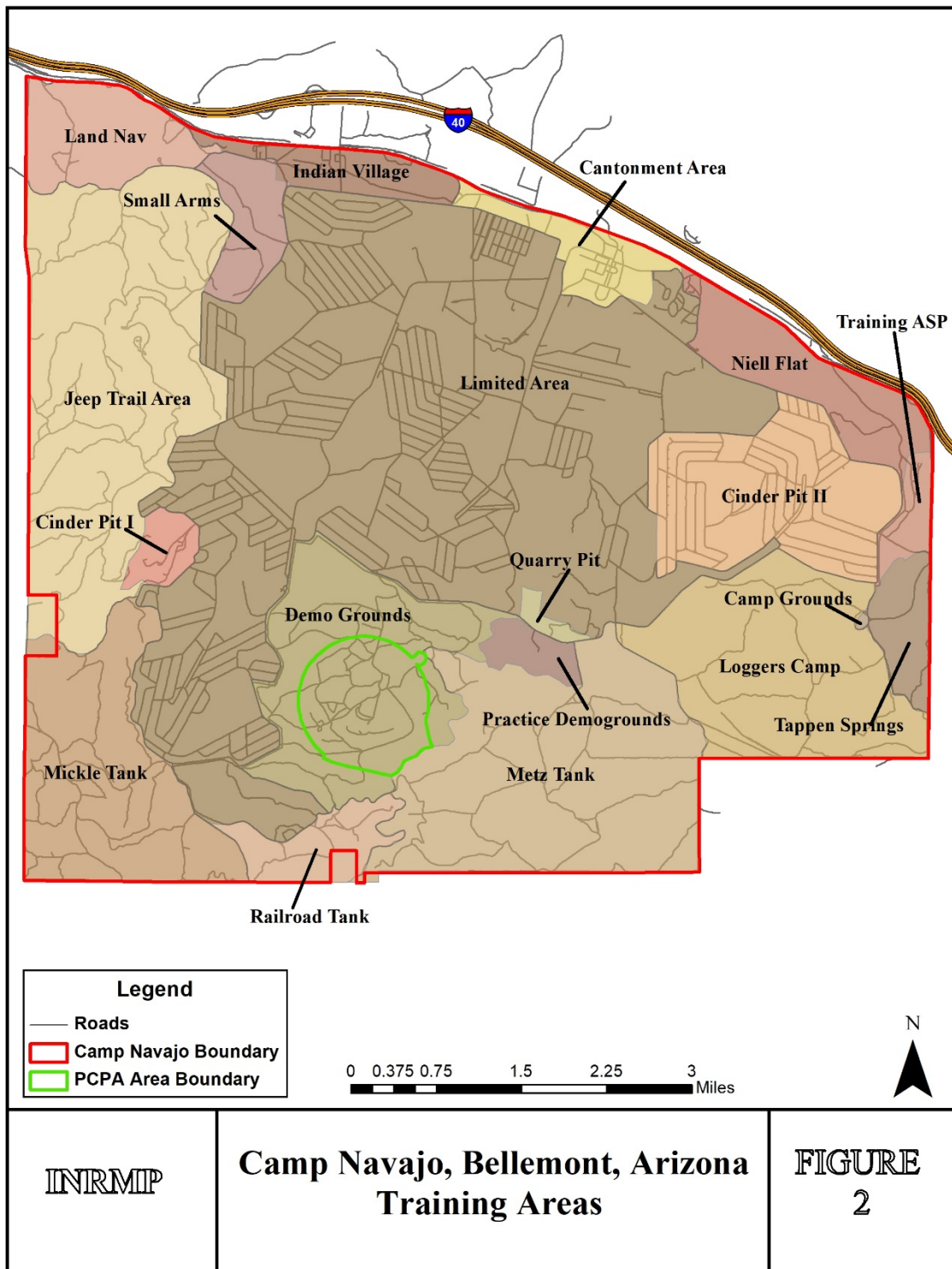
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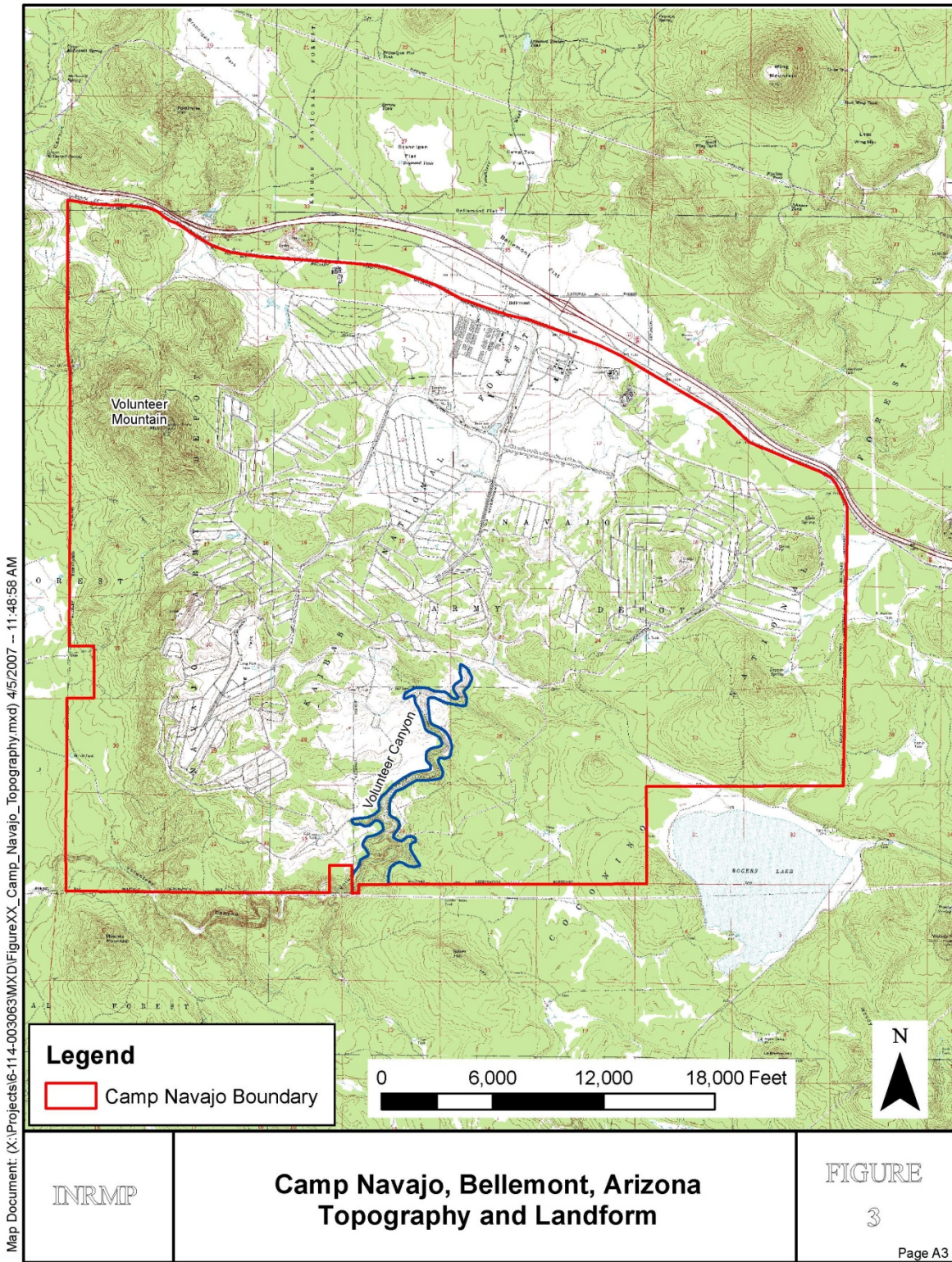
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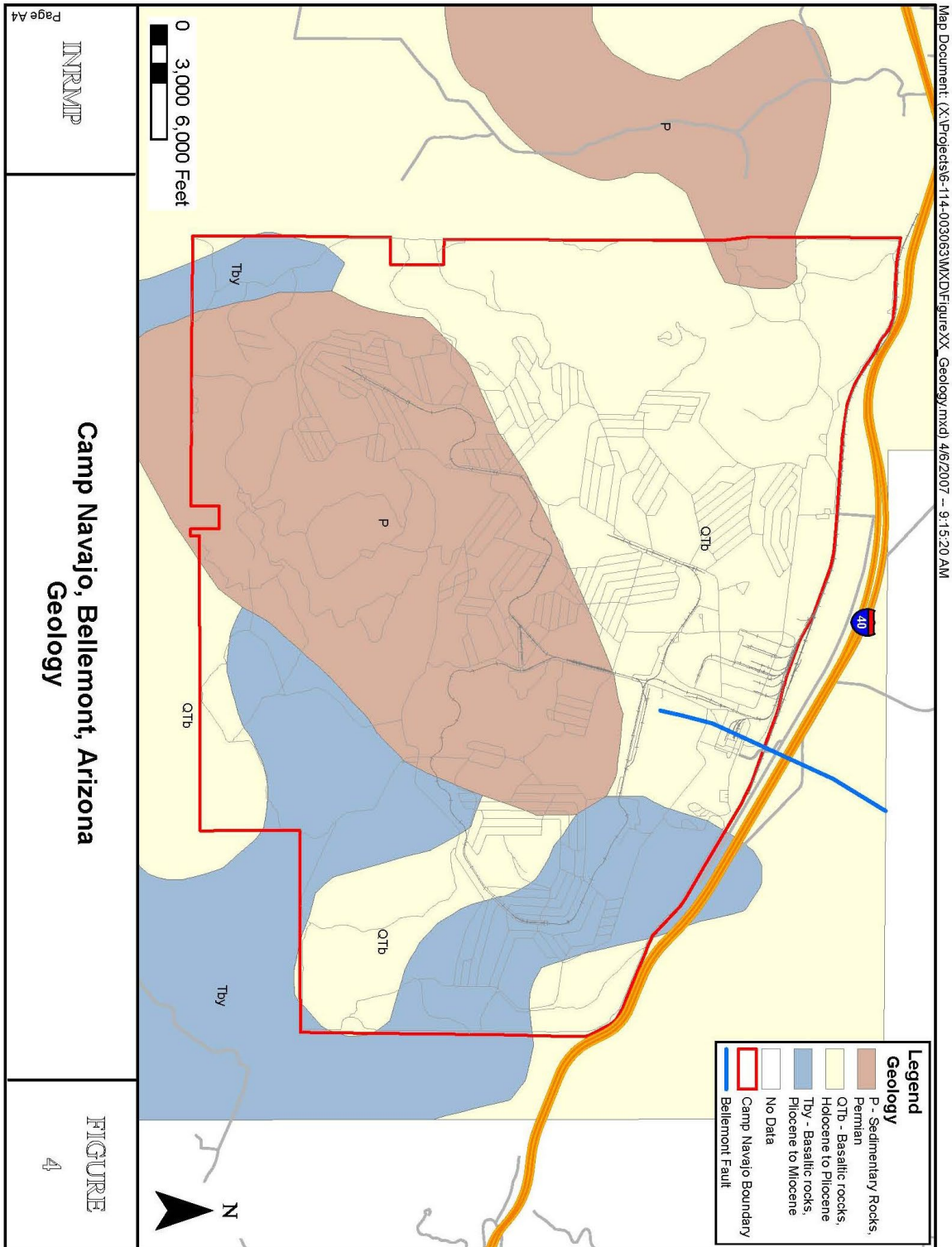
**APPENDIX A**

**FIGURES**

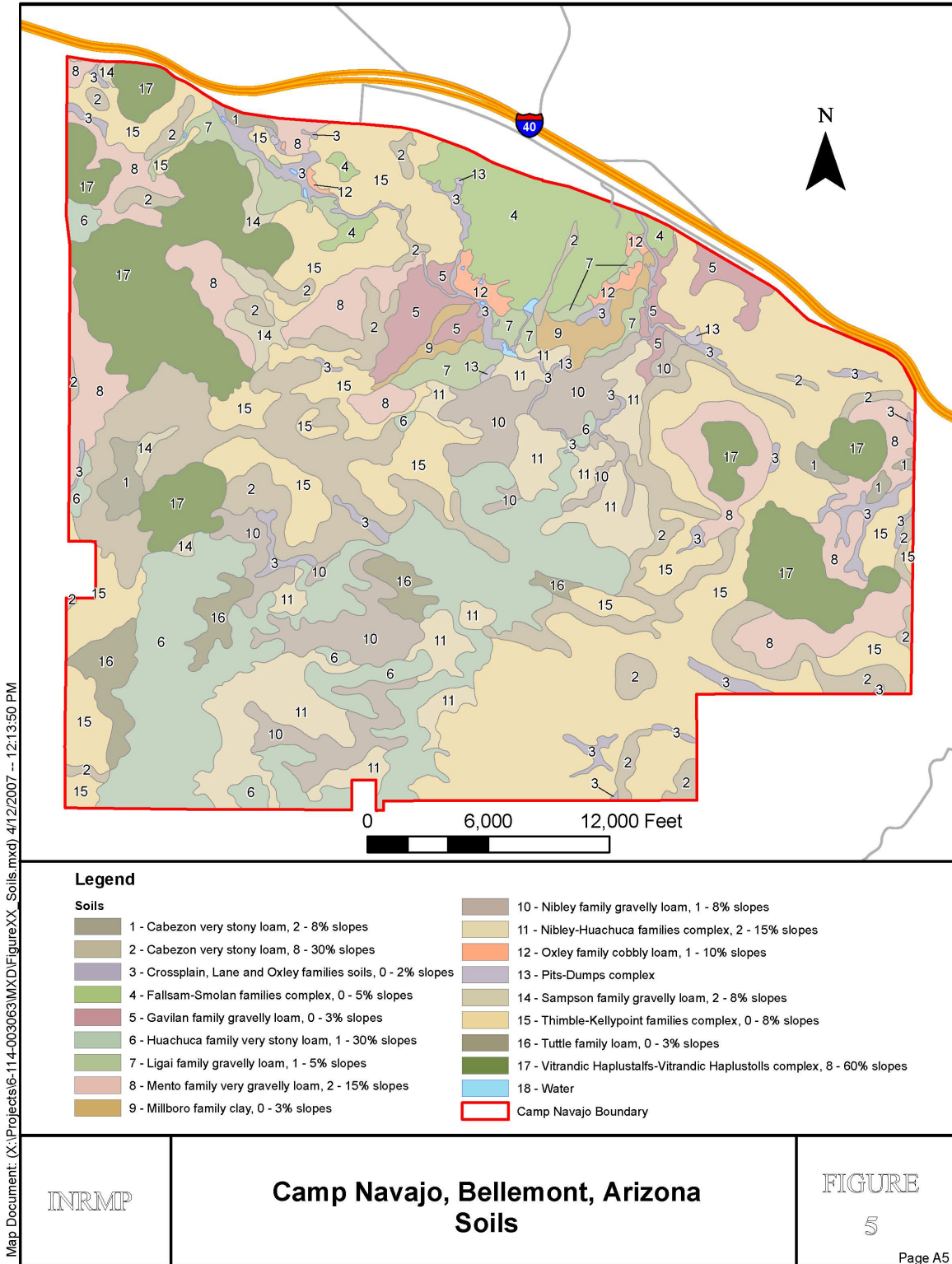


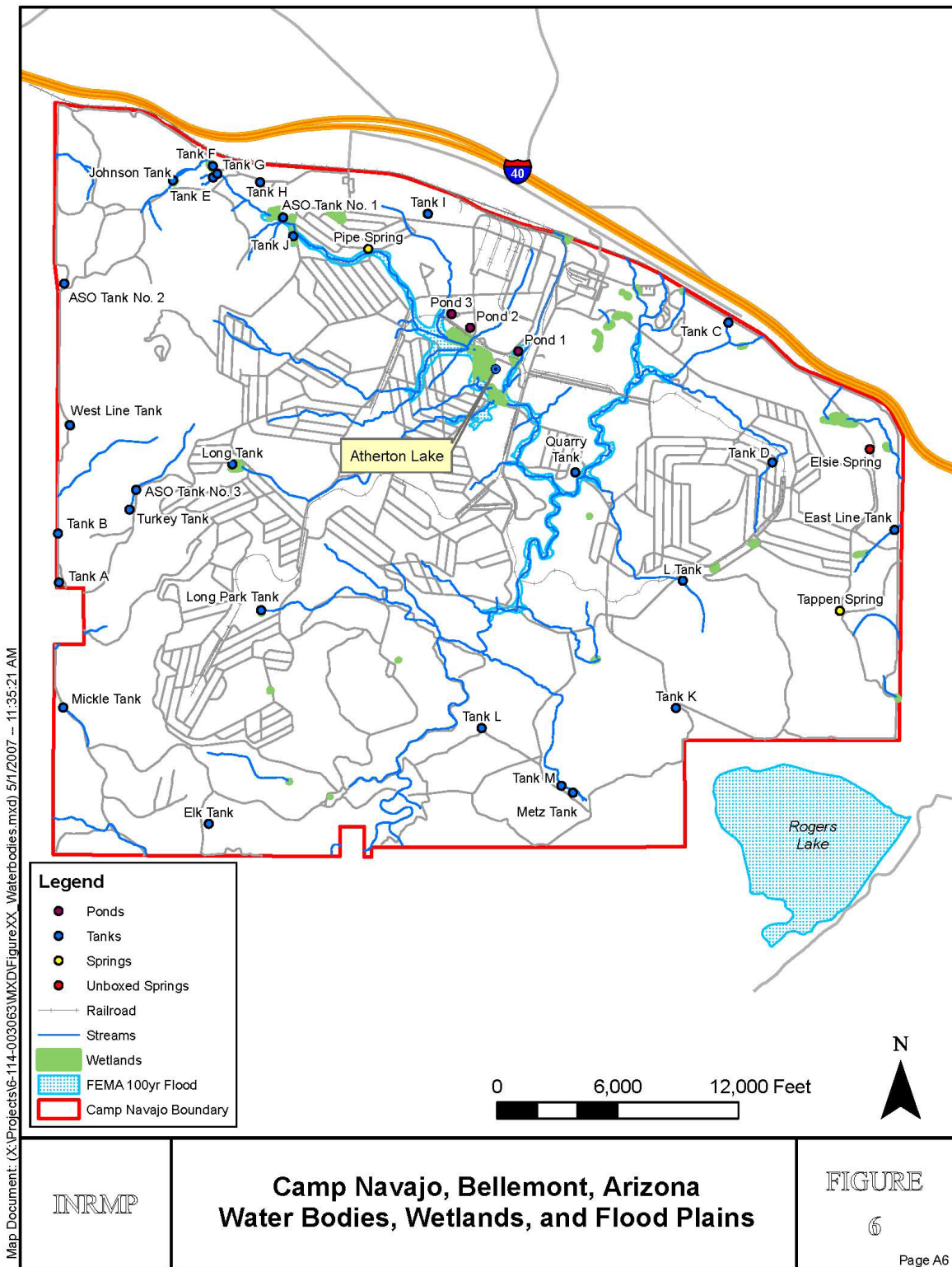


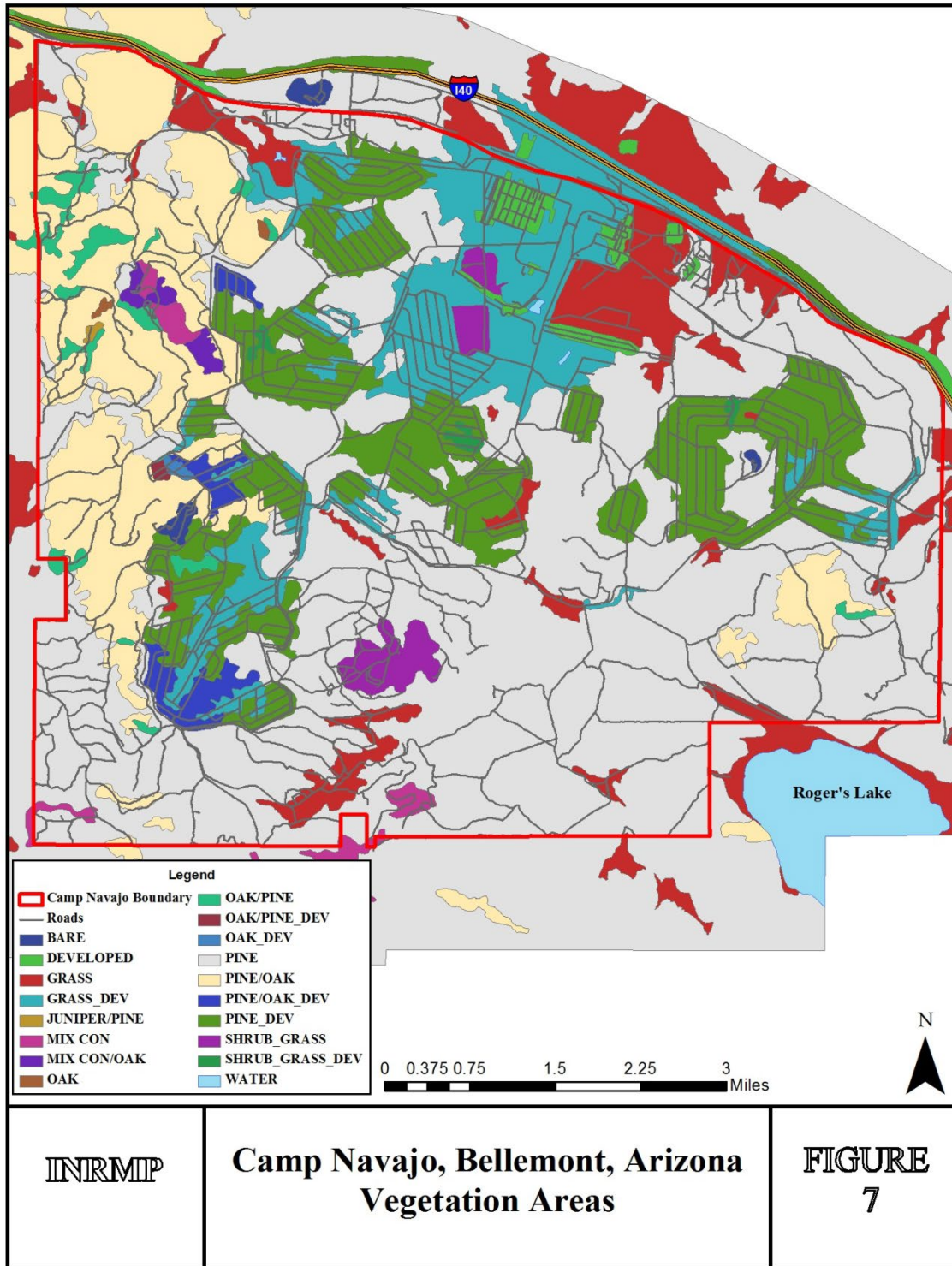








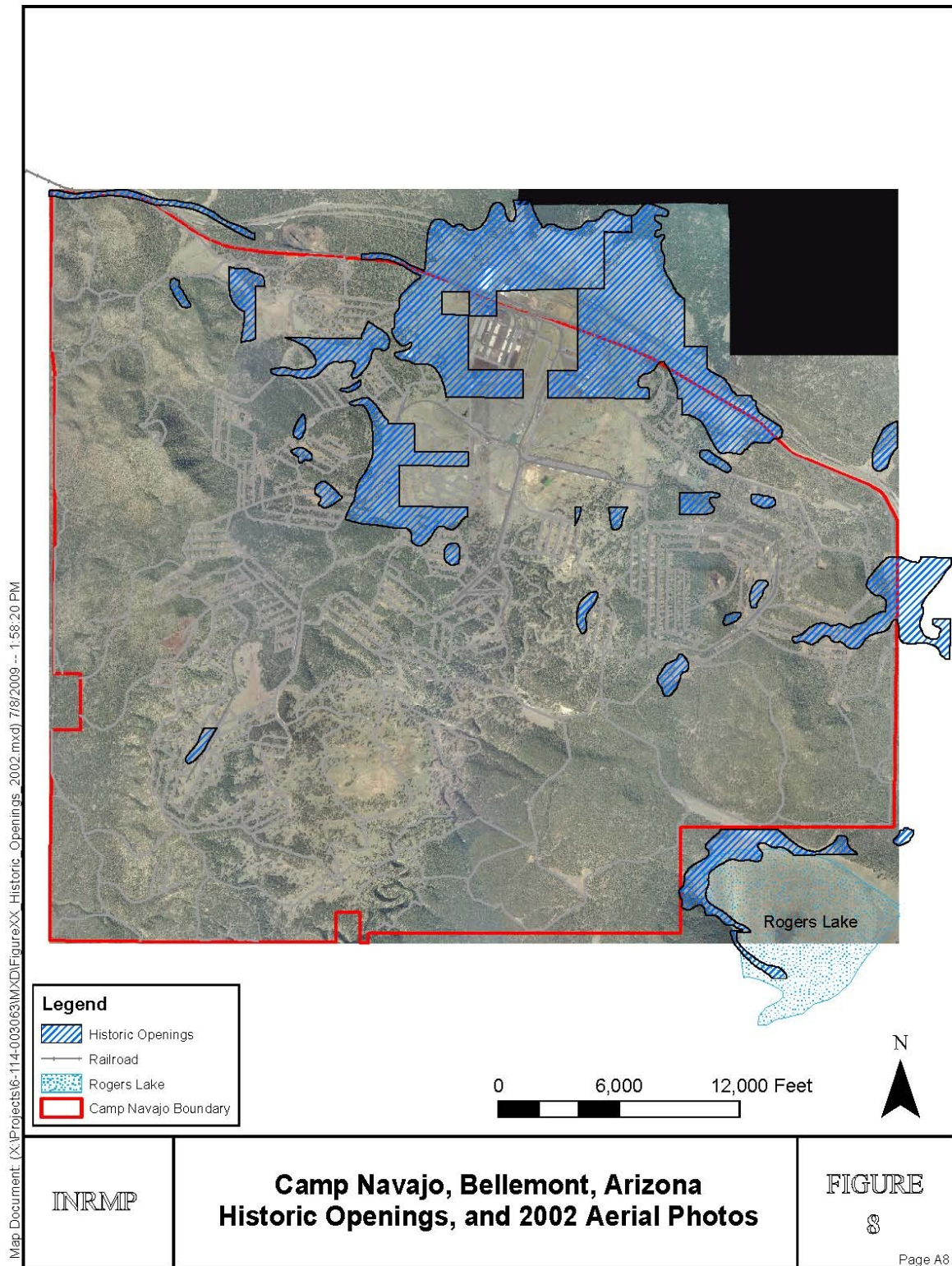


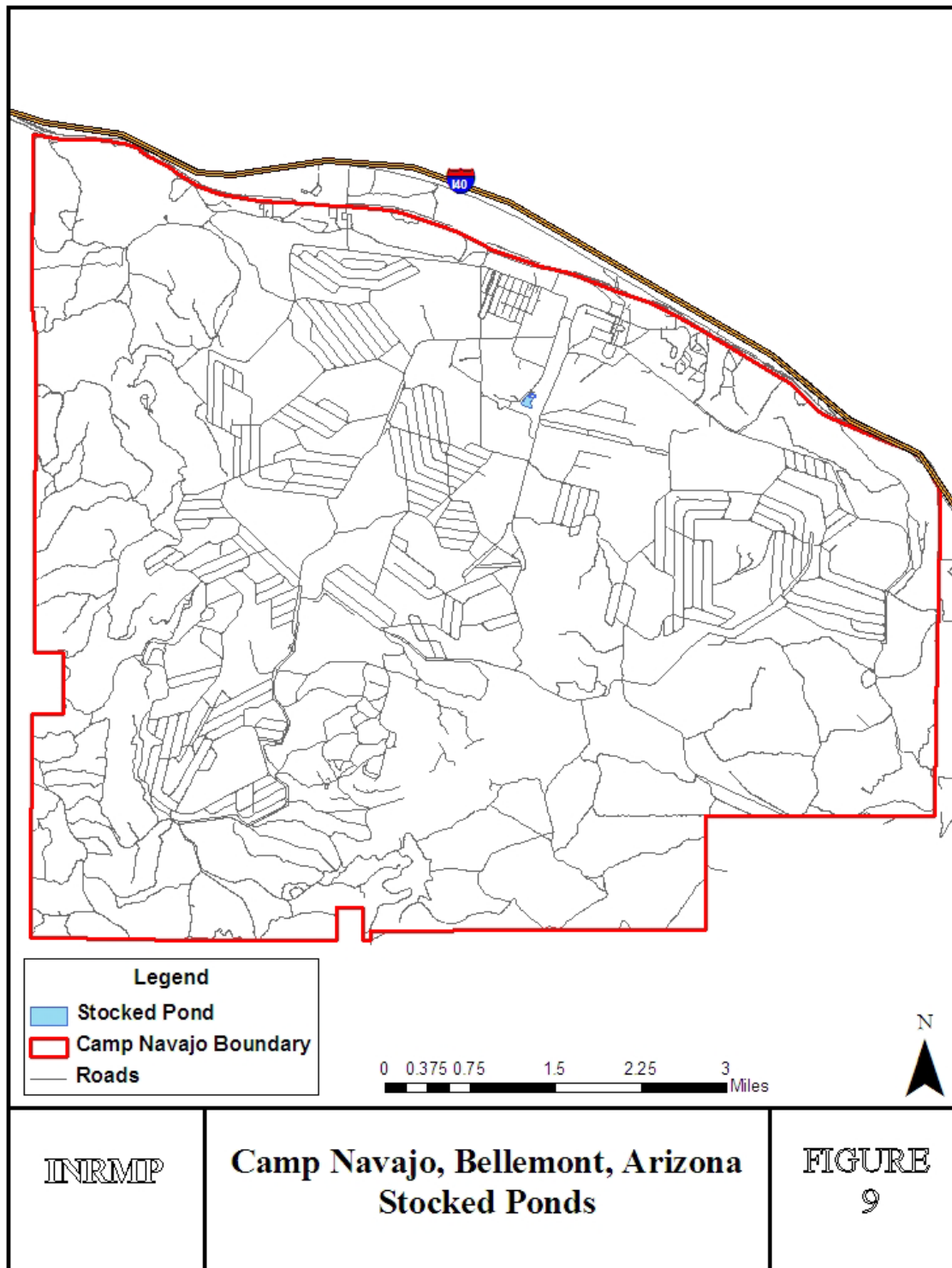


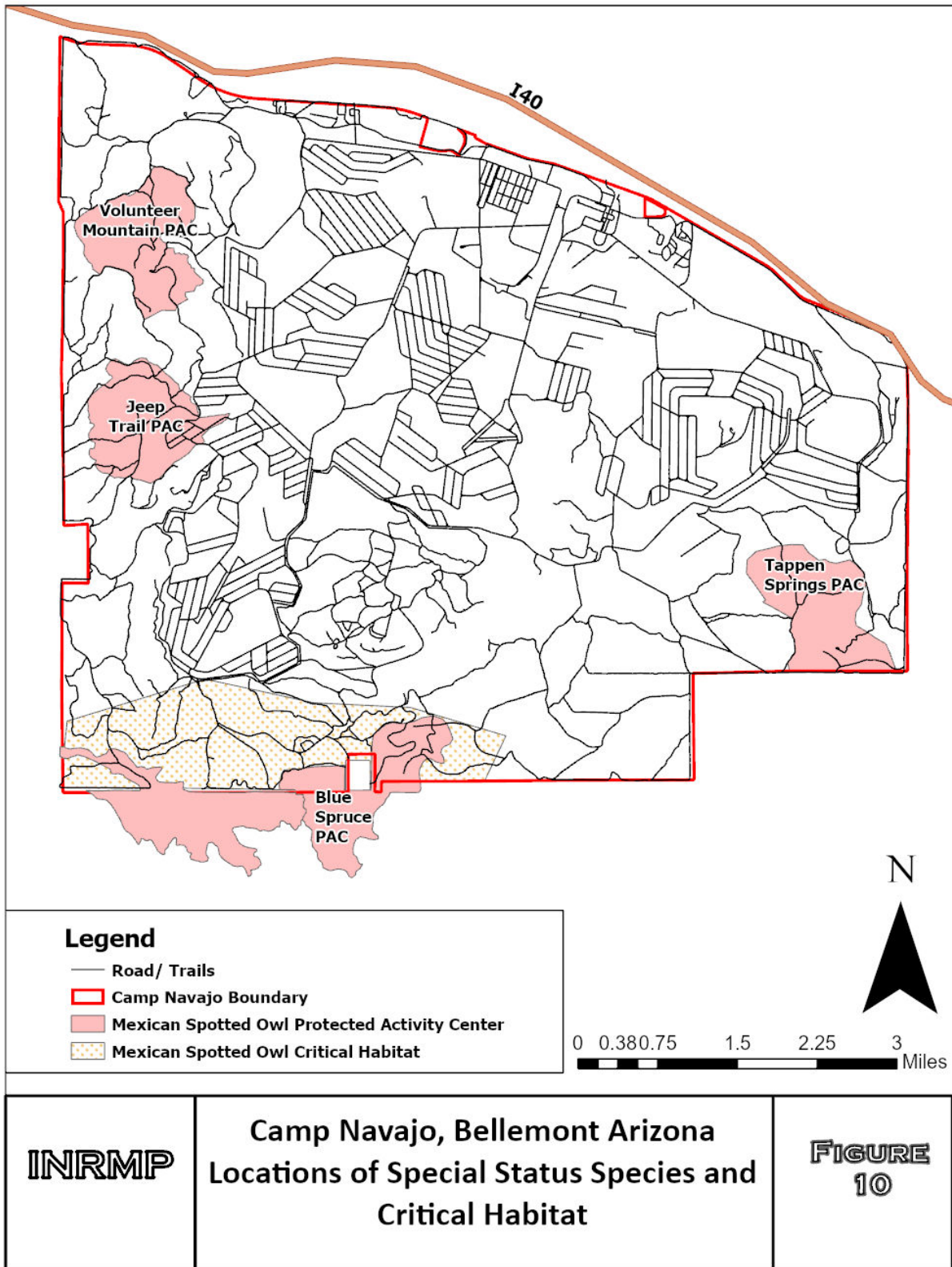
INRMP

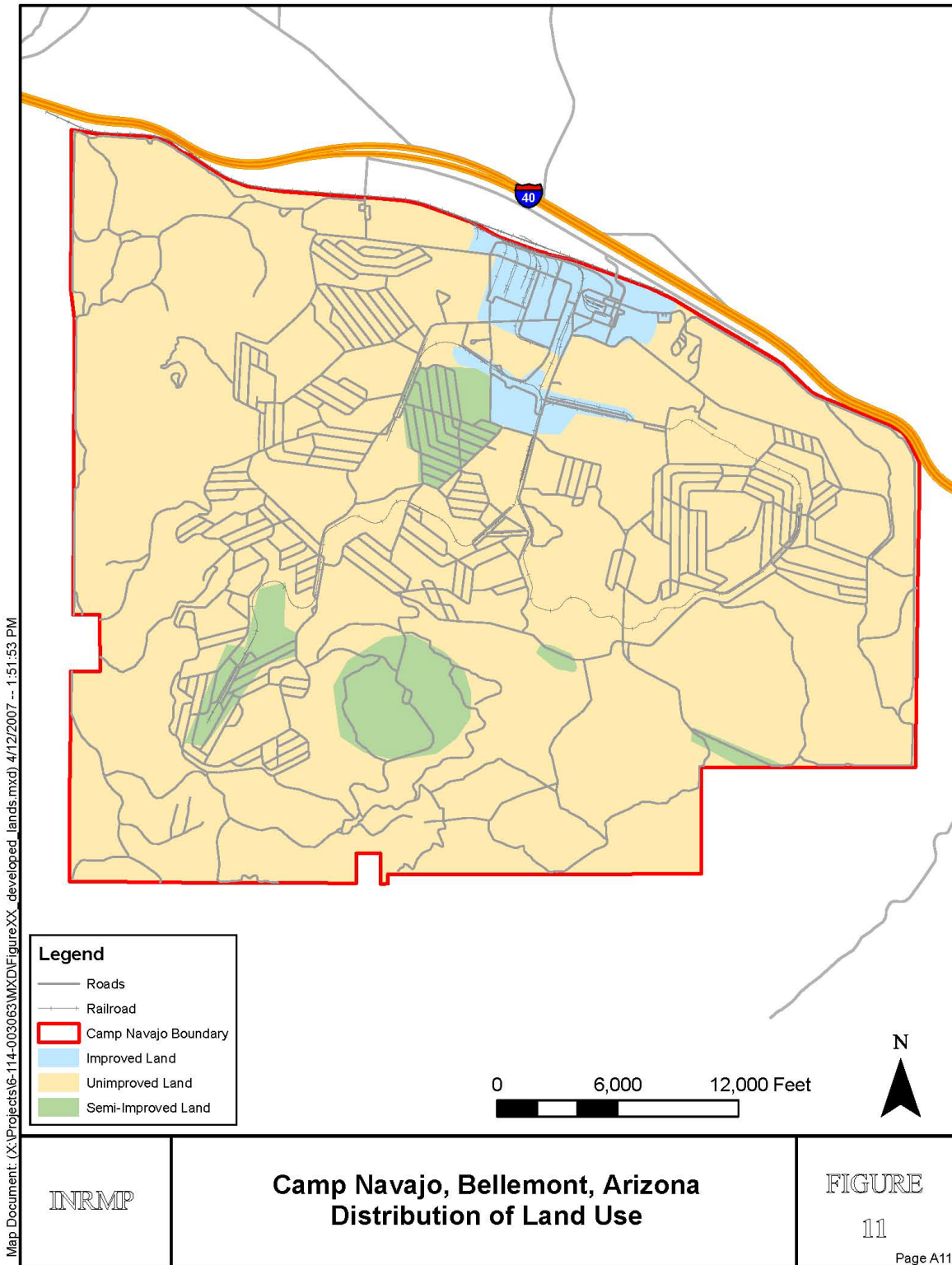
**Camp Navajo, Belmont, Arizona  
Vegetation Areas**

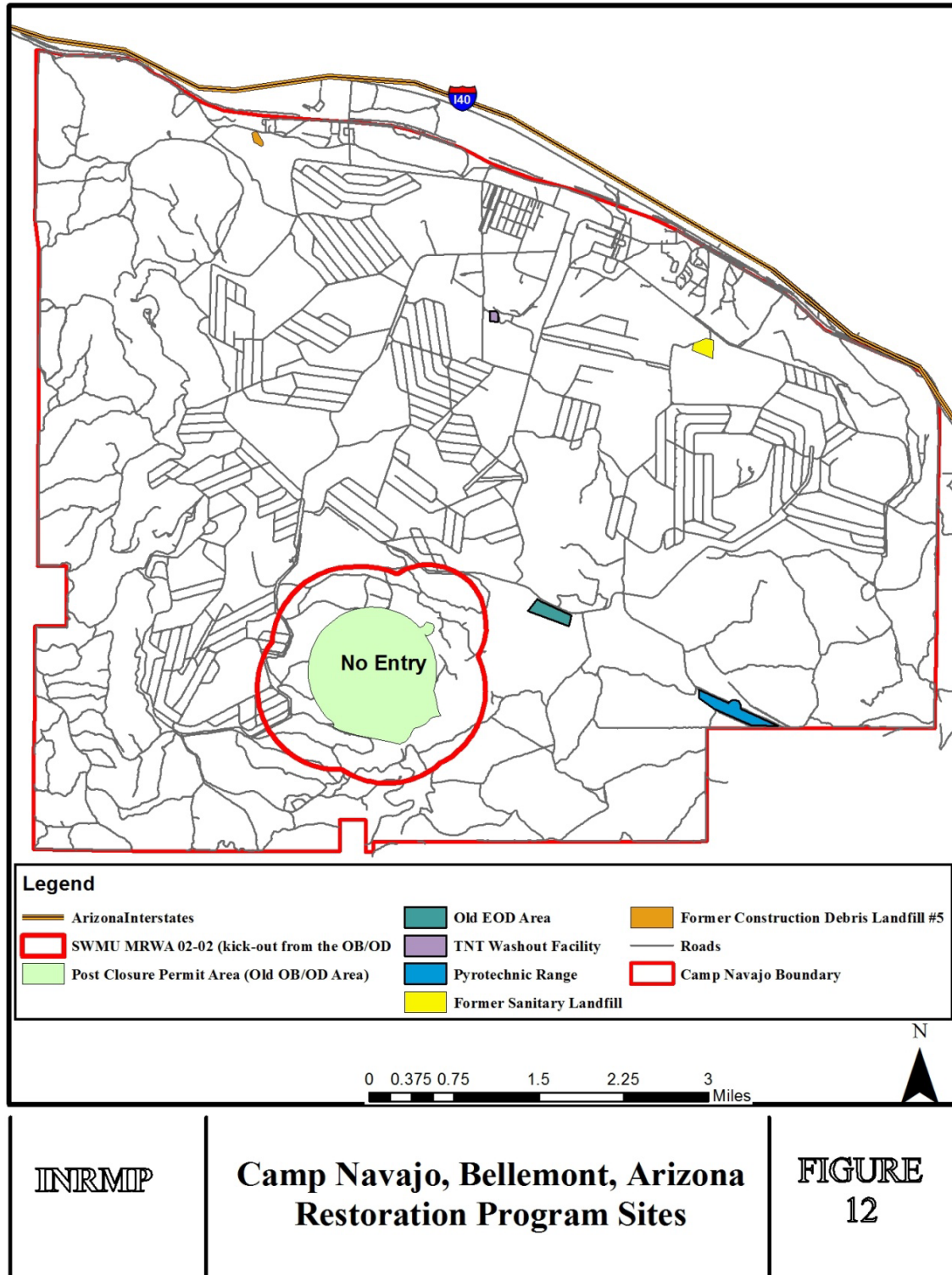
**FIGURE  
7**



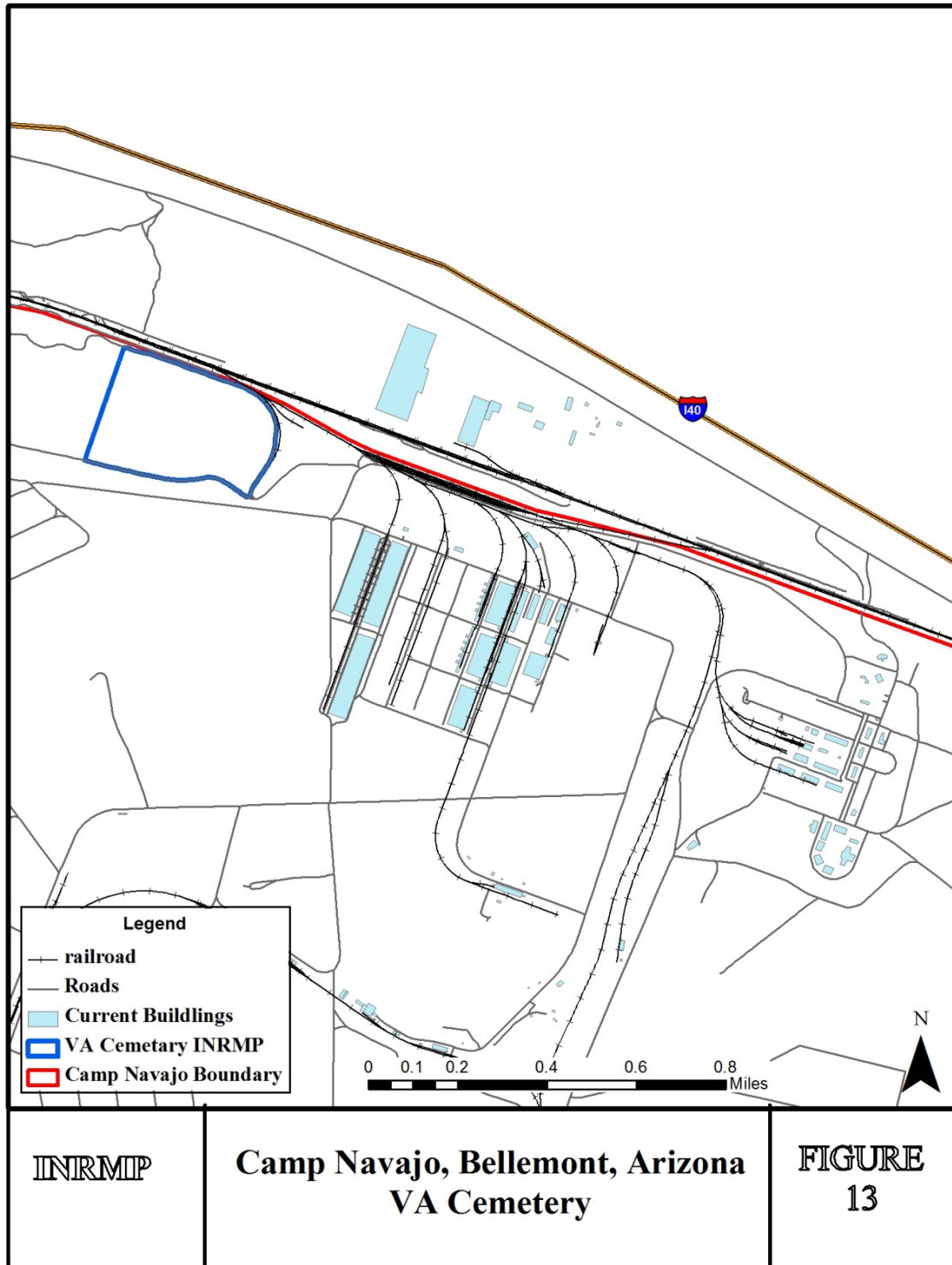


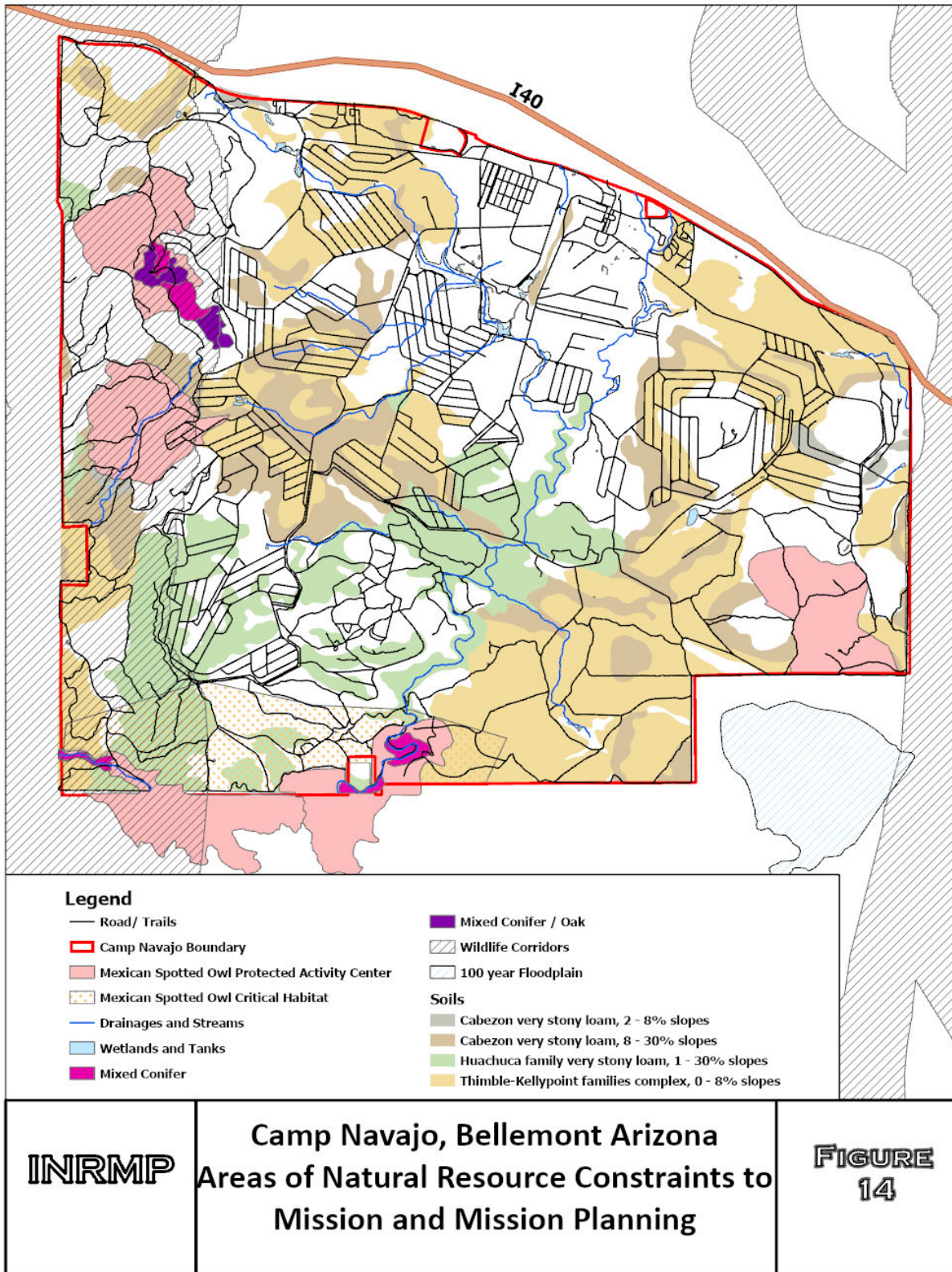


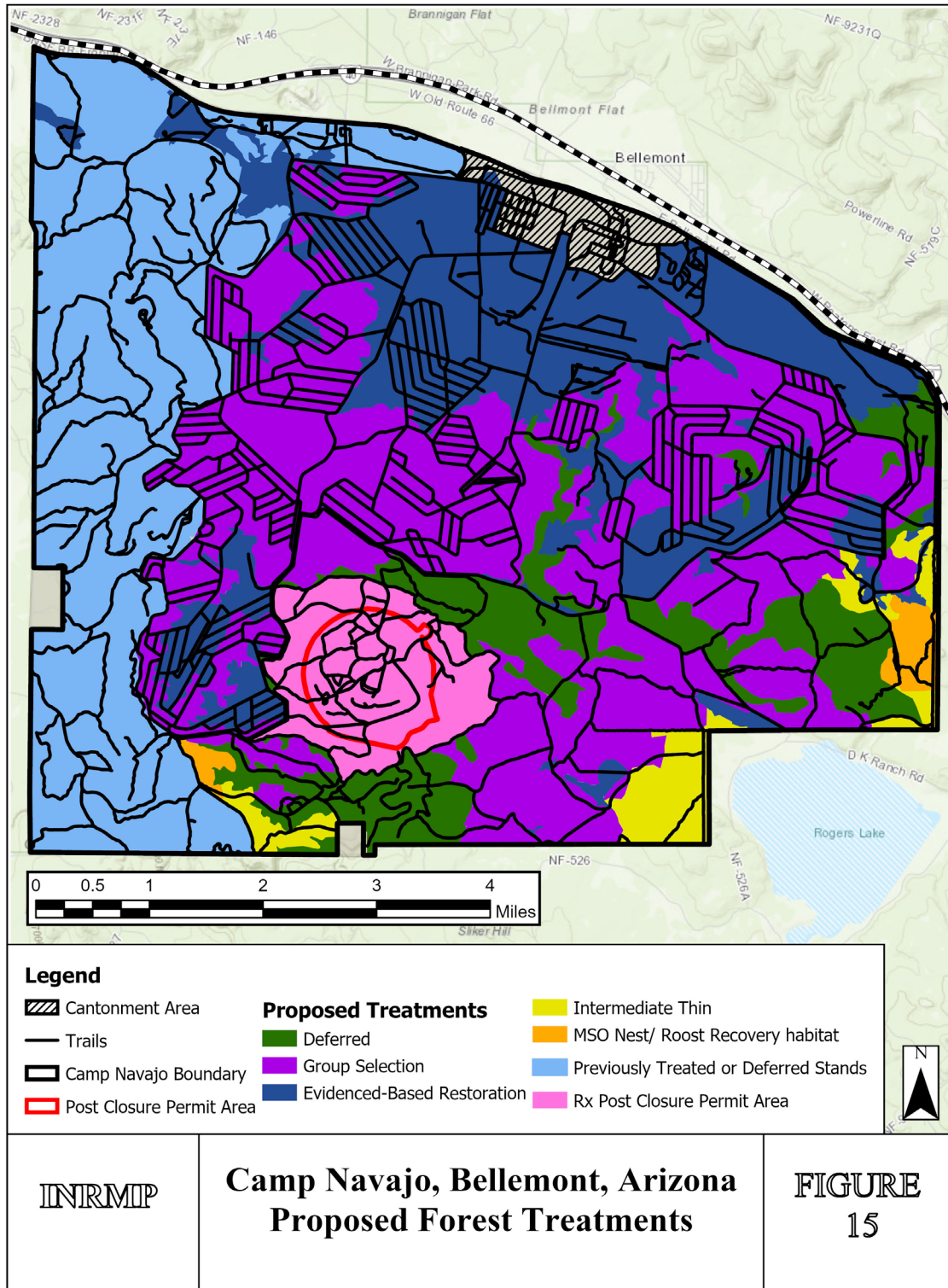


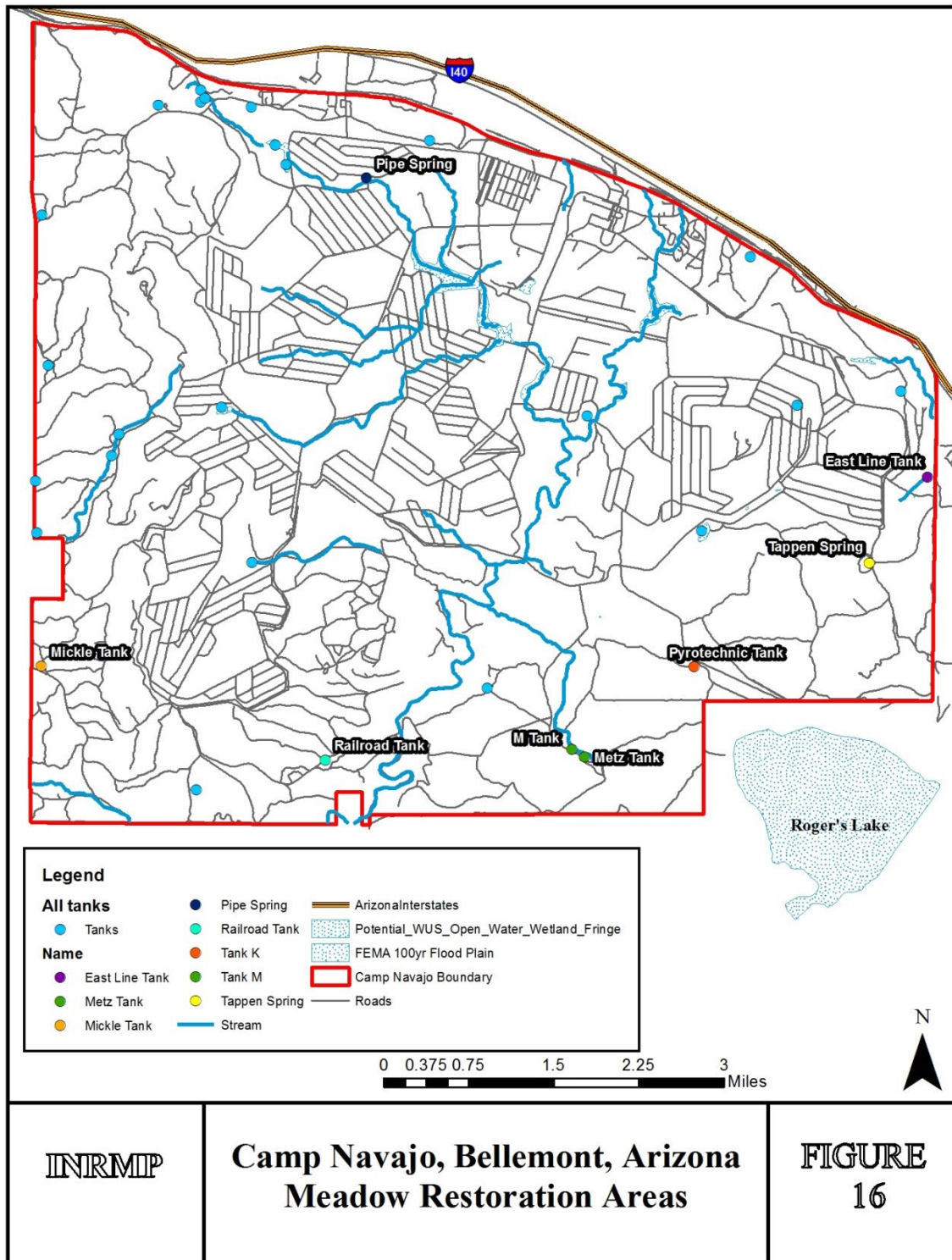












**APPENDIX B**  
**ENVIRONMENTAL ASSESSMENT OF INRMP**

**See attached**

**APPENDIX C**  
**AGENCY AND INTERESTED PARTY COMMENTS**

**See attached**

**APPENDIX D**  
**DOCUMENTED FLORA AND FAUNA OF CAMP NAVAJO**

**See attached**

**APPENDIX E**

**CAMP NAVAJO FOREST MANAGEMENT PLAN**

**See attached**



**APPENDIX F**  
**INTEGRATED WILDLAND FIRE MANAGEMENT PLAN**

**See attached**

**APPENDIX G**  
**CAMP NAVAJO PROJECT MATRIX**

**See attached**

**APPENDIX H**  
**BIOLOGICAL OPINION**

**See attached**

**APPENDIX I  
ANNUAL UPDATE FORM**

**ANNUAL REVIEW AND COORDINATION OF THE CAMP NAVAJO INTEGRATED NATURAL RESOURCE MANAGEMENT PLAN, BELLEMONT, ARIZONA**

The annual review will be conducted by in October Environmental Management System staff and FMO staff. Annual review will include feedback from USFWS, USFS, AGFD, and ASLD personnel as appropriate. The review shall consider operation and effect of the INRMP at Camp Navajo.

**REVIEWED BY:**

_____	_____
<b>The Adjutant General Arizona Army National Guard</b>	<b>Date</b>
_____	_____
<b>Environmental Program Manager Arizona Army National Guard</b>	<b>Date</b>
_____	_____
<b>Field Supervisor Arizona Ecological Services United States Fish and Wildlife Service, Region 2</b>	<b>Date</b>
_____	_____
<b>Flagstaff Regional Supervisor Arizona Game and Fish Department</b>	<b>Date</b>

**APPENDIX J**  
**BEST MANAGEMENT PRACTICES**

**See attached**

**APPENDIX K**  
**DRAFT PROGRAMMATIC AGREEMENT**

**See attached**

**APPENDIX L**  
**ITAM PROJECT MATRIX**

**See attached**

**APPENDIX M**  
**INTERGRATED PEST MANAGEMENT PLAN**

**See attached**