FINAL
PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
FOR
REDUCTION AND MANAGEMENT OF FUEL LOADS ON DEPARTMENT OF AIR FORCE-MANAGED LANDS

Prepared for:
Department of the Air Force

May 2024

Privacy Advisory

This Programmatic Environmental Assessment (PEA) is provided for public comment in accordance with the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality NEPA Regulations (40 Code of Federal Regulations [CFR] Parts 1500 - 1508), and 32 CFR Part 989, Environmental Impact Analysis Process (EIAP). This PEA was prepared in accordance with the updated September 2020 CEQ NEPA rules (85 Federal Register 43304 through 43376), as modified by the CEQ NEPA Implementing Regulations Revisions Final Rule, effective 20 May 2022.The EIAP provides an opportunity for public input on Department of the Air Force (DAF) decision-making, allows the public to offer inputs on alternative ways for the DAF to accomplish what it is proposing, and solicits comments on the DAF's analysis of potential environmental effects.

Public commenting allows the DAF to make better, informed decisions. Letters or other written or oral comments provided may be published in the EA. As required by law, comments provided will be addressed in the EA and made available to the public. Providing personal information is voluntary. Any personal information provided will be used only to identify your desire to make a statement during the public comment portion of this process. Private addresses will be compiled to develop a stakeholders list; however, only the names of the individuals making comments and specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the EA.

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This document has been verified that it does not exceed 75 pages, not including appendices, as defined in 40 CFR § 1501.5(f). As defined in 40 CFR § 1508.1(v) a "page" means 500 words and does not include maps, diagrams, graphs, tables, and other means of graphically displaying quantitation or geospatial information.

ABSTRACT

Designation:	Final Programmatic Environmental Assessment
Title of Proposed Action:	Reduction and Management of Fuels on Department of Air Force-Managed Lands
Project Location:	Department of the Air Force Installations
Lead Agency:	United States Department of the Air Force
Cooperating Agency:	None
Affected Region:	Continental United States (CONUS) and Alaska
Action Proponent:	Air Force Wildland Fire Branch (AFWFB)
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The Department of the Air Force (DAF) has prepared this Programmatic Environmental Assessment (PEA) in accordance with the National Environmental Policy Act (NEPA), as implemented by the Council on Environmental Quality regulations and DAF regulations for implementing NEPA. The Proposed Action would implement a full suite of fuels reduction and management activities on DAF-managed lands within the Continental United States and Alaska. These activities comply with all applicable federal regulations, state regulations, and permitting requirements. Implementation of the Proposed Action would ensure that a programmatic approach to fuels reduction and management is used to optimize both mission protection and ecosystem management. The reduction and management of fuel loads would allow for mission sustainment and build ecosystem resiliency that promotes both biodiversity and sustainability, resulting in the protection of natural and cultural resources.

This PEA for implementation of fuels reduction and management actions evaluates the potential environmental impacts associated with the Proposed Action and the No Action Alternative to the following resource areas: biological resources, water resources, earth resources, cultural resources, human health and safety, air quality, noise, infrastructure, and environmental justice.

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FINDING OF NO SIGNIFICANT IMPACT (FONSI)
REDUCTION AND MANAGEMENT OF FUEL LOADS ON DEPARTMENT OF AIR FORCE-MANAGED LANDS

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 United States Code (U.S.C.) 4321-4370h; Council on Environmental Quality (CEQ) Regulations, 40 Code of Federal Regulations (CFR) Parts 1500 - 1508; and the United States Department of the Air Force (DAF) Environmental Impact Analysis Processes, 32 CFR Part 989, the DAF has prepared the attached Programmatic Environmental Assessment (PEA) to assess the potential environmental consequences from the Proposed Action to implement a wide range of fuels reduction and management activities on DAF-managed lands in the continental United States and Alaska. The attached PEA is incorporated by reference in this finding.

Purpose and Need

The purpose of the Proposed Action is to manage fuel loads to reduce the risk of wildfires that may impair mission capabilities. Reducing and managing fuel loads would allow for mission sustainment and build ecosystem resilience that promotes both ecological biodiversity and sustainability, resulting in the protection of natural and cultural resources as directed by the Sikes Act. The need for the Proposed Action is to reduce and continuously manage fuel loads to protect and enhance built and natural infrastructure and natural and cultural resources, promoting resilient ecosystems to support mission sustainment. Reducing and managing fuels is also needed to reduce the adverse impacts of wildland fires.

Proposed Action and Alternatives

The DAF proposes to implement a wide range of fuels reduction and management activities on DAF-managed lands in the continental United States and Alaska. Fuels reduction and management activities included in the Proposed Action consist of prescribed burns, mechanical treatment, hand treatment, chemical treatment, and targeted grazing. Detailed descriptions of these treatments are provided in **Section 2.1** of the PEA. The Proposed Action would be implemented in accordance with the *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDA, 2001); Department of Defense Instruction (DoDI) 4715.03, *Natural Resources Conservation Program*; and Air Force Manual (AFMAN) 32-7003, *Environmental Conservation*.

Aerial treatments (including prescribed burn aerial operations), biological treatments (pathogenic and insects), and use of chemicals other than herbicides are not included in the Proposed Action. The DAF would conduct additional environmental analysis if one or combinations of these treatment methods is considered for implementation in the future.

Alternative 1 (Proposed Action Alternative) and the No Action Alternative, which are analyzed in detail in the PEA, are summarized below.

Alternative 1 (Proposed Action Alternative)

Alternative 1 would implement the proposed fuels treatments described above. The type of fuels treatments implemented at each DAF installation would vary depending on the types of vegetation to be treated, local geographic and climate conditions, and other relevant factors. The fuels treatments would be implemented individually or in various combinations and would be implemented year-round and/or when environmental conditions (e.g., relative humidity, wind speed, wind direction) reach targets to safely ignite the prescribed fire, although most would be implemented when vegetation is dormant. The flexibility to use multiple treatment methods would allow for more effective management and use of appropriate treatments on a site-specific basis.

Proposed fuels treatment methods would be implemented in accordance with all applicable federal, state, and local laws and regulatory requirements. Proposed fuels treatments would also incorporate and adhere to all applicable standards and best management practices (BMPs) established by the National Wildfire Coordinating Group and the National Association of State Foresters to prevent or minimize potential impacts on local populations and environmental resources. Before implementing a proposed fuels treatment method, the DAF would conduct additional site-specific analysis at each installation to identify the type(s) of vegetation targeted for treatment, the type(s) of treatment method(s) to be used, and local conditions or sensitive resources that could be affected by proposed treatment(s).

No Action Alternative

Under the No Action Alternative, the DAF would conduct site-specific environmental analysis for fuels reduction and management activities rather than implementing a programmatic, nationwide approach to these activities. Although the No Action Alternative does not meet the purpose and need, it is analyzed in the PEA in accordance with CEQ NEPA regulations 40 CFR Parts 1500 - 1508 and 23 CFR Part 989 to provide a baseline for the evaluation of potential impacts from Alternative 1. The No Action Alternative represents a potential and viable decision to not implement the Proposed Action.

Summary of Findings

The PEA evaluates the potential effects of Alternative 1 and the No Action Alternative on the following environmental resources: biological resources, water resources, earth resources, cultural resources, hazardous materials, human health and safety, air quality, noise, infrastructure, and environmental justice. The DAF determined that the Proposed Action would have no potential to meaningfully or measurably affect hazardous materials and hazardous waste, socioeconomics, or land use; therefore, those resources were dismissed from detailed analysis in the PEA.

Potential environmental consequences are described at the programmatic level of analysis in the PEA. A PEA allows for the assessment of a group or suite of proposed projects, actions, initiatives, or activities that are similar in scope, scale, magnitude, and nature of potential impacts in accordance with CEQ regulations at 40 CFR § 1501.11. Based on the analysis presented in the PEA, Alternative 1 would generally have short-term adverse impacts and long-term beneficial impacts on most environmental resources listed above. All short-term adverse impacts would cease following completion of each fuels treatment method. Alternative 1 would have no significant short-term or long-term adverse impacts on any environmental resource evaluated in the PEA. The No Action Alternative could potentially have significant short-term or long-term adverse impacts on any environmental resources evaluated in this PEA. Existing fuel loads would increase the threat of large-scale wildfires, reduce mission capabilities, impair aircrew readiness, compromise ecosystem resilience, and potentially result in a loss of critical resources. Additionally, the No Action Alternative could contribute to climate change by increasing the risk of uncontrolled wildfires that would increase greenhouse gas emissions and reduce carbon sequestration.

As a programmatic analysis, the PEA is intended to support DAF installation-level programs by streamlining coordination and analysis. The DAF would conduct additional analysis at each DAF installation before a proposed treatment method would be implemented to evaluate location conditions and potential impacts. Personnel at each installation would review existing NEPA documentation, including this PEA, to determine the extent to which NEPA requirements are met. Based on the programmatic analysis in this PEA, the DAF would conduct additional (or "tiered") NEPA analyses if site-specific planning for a proposed fuels treatment method determines that the intensity, severity, or duration of potential impacts would exceed those described in this PEA. Thresholds that would trigger additional analysis for each resource are described in the PEA. Any required mitigation measures identified during tiered NEPA analysis would be documented and implemented at the site-specific level.

As part of site-specific planning and/or NEPA analysis for each fuels treatment method, the DAF would conduct consultations, as required, with the following agencies to fulfill applicable regulatory requirements regarding potential impacts on resources under its jurisdiction. Not all fuels treatments at all locations would require consultations with all of the following agencies. The need for consultation would be based on site-specific factors such as the presence of protected resources.

- The US Fish and Wildlife Service and the National Oceanic and Atmospheric Administrative Fisheries (National Marine Fisheries Service) regarding the Proposed Action's potential effects on federally listed threatened and endangered species and other protected and sensitive species, in accordance with Section 7 of the Endangered Species Act, the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and other relevant laws and regulations.
- Applicable State Historic Preservation Officers regarding potential effects on historic properties listed or eligible for listing in the National Register of Historic Places, in accordance with Section 106 of the National Historic Preservation Act (NHPA).
- The US Army Corps of Engineers and/or applicable state-level regulatory agencies regarding potential impacts on tidal and non-tidal wetlands and other regulated water resources, in accordance with Sections 401 and 404 of the Clean Water Act, Executive Order (EO) 11990, *Protection of Wetlands*, and other applicable regulatory requirements.
- Federally recognized Native American tribes regarding potential impacts on traditional cultural resources having historic, cultural, or religious significance, in accordance with Section 106 of the NHPA, DoDI 4710.02, *DoD Interactions with Federally Recognized Tribes*; Department of the Air Force Instruction 90-2002, *Interactions with Federally Recognized Tribes*; and AFMAN 32-7003, *Environmental Conservation*.
- State coastal zone managers regarding potential impacts on coastal zone resources, in accordance with the Coastal Zone Management Act of 1972 (16 U.S.C. § 1451, et seq., as amended).
- State or local floodplain managers regarding potential impacts on floodplains, in accordance with EO 11988, *Floodplain Management*.
- Any other applicable agency consultation and compliance requirements identified during site-specific planning or tiered NEPA analysis would be conducted and adhered to at the installation level. Adherence to applicable consultation and regulatory requirements, and incorporation of applicable BMPs during proposed fuels treatments, would prevent or

minimize adverse impacts on environmental resources and ensure they remain less than significant.

- Work planning prescribed burn planning with local and regional US Environmental Protection Agency Clean Air Act officials to minimize the impact to airshed's PM2.5 and PM10 limits.

Cumulative Impacts

The analysis in the PEA indicates that the proposed fuels treatment methods would not be anticipated to contribute to significant impacts when combined with other reasonably foreseeable future actions. The analysis of cumulative impacts from a specific fuels treatment at a particular installation would be conducted if an installation determines that additional tiered NEPA analysis is required. The geographic and temporal boundaries for any such analysis of cumulative effects would be installation specific. The analysis of cumulative impacts at the installation level would consider only those resources that have the potential to be affected from by incremental effects of proposed activities in combination with past, present, and reasonably foreseeable future activities relative to their location.

Public Involvement

The DAF published a Notice of Availability for this Draft PEA and proposed Finding of No Significant Impact (FONSI) in *USA Today* and the *San Antonio Express-News*. The notice ran for two consecutive days and indicated the availability of the Draft PEA and Proposed FONSI for a 45-day review and comment period. The NOA provided a website address for access to the PEA and Proposed FONSI; contact information for more information; addresses of local libraries where printed copies of the PEA and Proposed FONSI could be viewed; and instructions for submitting comments electronically or by postal mail. Letters announcing the availability of the PEA and Proposed FONSI for public review were sent to the agencies and organizations listed in **Appendix B** during the 45-day public comment period.

The public comment period ended on April 10, 2024. One public comment on the Draft PEA was received and is provided in **Appendix B**.

Finding of No Significant Impact

After review of the PEA for Reduction and Management of Fuel Loads on DAF-Managed Lands, incorporated by reference, I have determined that the Proposed Action will not have a significant impact on the quality of the human or natural environment with implementation of the identified regulatory compliance measures. Accordingly, an Environmental Impact Statement is not required. The signing of this FONSI completes the environmental impact analysis process.

LIU.ROBERT.12478900 80 Digitally signed by LIU.ROBERT.1247890080 Date: 2024.06.05 17:15:06 -05'00'

ROBERT LIU, COLONEL, DAF
NEPA Division Chief, AFCEC

6/5/2024

DATE

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AFB	Air Force Base
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFR	Air Force Range
AFS	Air Force Station
AFWFB	Air Force Wildland Fire Branch
APE	Area of Potential Effects
ATV	all-terrain vehicle
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practice
BPS	Biophysical Setting
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
COC	community of comparison
CONUS	Continental United States
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DAF	Department of the Air Force
DoD	Department of Defense
DoDD	DoD Directive
DoDI	Department of Defense Instruction
DOI	Department of the Interior
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FES	Fire and Emergency Services
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FRCC	Fire Regime Condition Class
FRG	fire regime group
GHG	greenhouse gas
GIS	geographic information system
GPS	global positioning system

HH&S	human health and safety
INRMP	Integrated Natural Resources Management Plan
JBSA	Joint Base San Antonio
LANDFIRE	Landscape Fire and Resource Management Planning Tools
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIFTT	National Interagency Fuels, Fire and Vegetation Technology Transfer
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOx	nitrogen oxide
NRCS	Natural Resource Conservation Service
NTTR	Nevada Test and Training Range
NVC	National Vegetation Classification
NWCG	National Wildfire Coordinating Group
O_3	ozone
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
Pb	lead
PEA	Programmatic Environmental Assessment
PM_{10} and $PM_{2.5}$	particulate matter smaller than 10 or 2.5 microns; may also be considered dust
ROI	Region of Influence
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOx	sulfur oxides
UCMP	University of California Museum of Paleontology
U.S.C.	United States Code
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
UTTR	Utah Test and Training Range
UTV	utility task vehicle
VCC	Vegetation Condition Class
VOC	volatile organic compound
WFMP	Wildland Fire Management Plan
WOTUS	Waters of the United States
WSM	Wildland Support Module

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CHAPTER 1 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The Department of the Air Force (DAF) established the Air Force Wildland Fire Branch (AFWFB) in July 2012 as part of the Operations Division of the Air Force Civil Engineer Center Environmental Directorate to manage increasing wildfire threats to DAF missions.

Wildland fire is defined as any non-structure fire that occurs in the wildland and includes:

- wildfires, including unplanned natural fires (e.g., lightning-caused wildfires), munitions-caused fires, unauthorized human-caused fires, escaped prescribed fire projects, and all other unplanned wildfires, and;
- prescribed fires purposely ignited by natural resource managers to meet specific land management objectives.

The mission of the DAF Wildland Fire Program is to ensure military mission capability and readiness through a strategic, cost-effective, wildland fire organizational structure that provides ecosystem management, promotes long-term range sustainment, leverages partnerships, and provides key fire-related information to decision-makers. The goals of the DAF wildland fire program are:

- Reduce wildfire threats to DAF mission assets and personnel through fuel reduction treatments.
- Provide guidance for execution of wildfire suppression, mitigation, prescribed fire, and hazardous fuel reduction on DAF installations.
- Provide strategic, logistical, and professional wildland fire support to ensure military preparedness.
- Leverage interagency partnerships and technical expertise for long-term cost savings to the DAF.
- Train DAF personnel to nationally recognized National Wildfire Coordinating Group (NWCG) standards to prevent injury and loss of life and build response capability.
- Collect, analyze, and communicate key wildland fire data to demonstrate ecological benefits and risk to mission.

Fuels consist of all living and dead plant material that can be ignited by a fire.

The AFWFB uses management tools, such as prescribed fire, to manage fire-dependent ecosystems as well as mechanical fuel reduction methods to build ecosystem resilience. As part of its efforts, the AFWFB coordinates and develops wildland fire planning documents, engages with natural resource experts and partners to perform ecological data collection and monitoring, and aids in wildfire suppression for resource protection.

The *Review and Update of the 1995 Federal Wildland Fire Management Policy* (US Department of Agriculture [USDA], 2001) is the primary wildland fire policy for federal agencies and establishes principles, policies, and guidance for implementing wildland fire programs on Department of Defense (DoD) lands. Additional guidance and policy relating to natural resource and wildland fire management are also defined in DoD Instruction (DoDI) 4715.03, *Natural Resources Conservation Program* and Air Force Manual (AFMAN) 32-7003, *Environmental Conservation*. While the Air Force's Wildland Fire Program must comply with all applicable regulations, it is guided directly by a few primary statues that inform how the program is managed. These include, but are not limited to, the Sikes Act, as amended (16 United States Code [U.S.C.] § 670 et seq.), the Endangered Species Act (ESA), as amended (16 U.S.C. § 1531 et seq.), and the Migratory Bird Treaty Act (MBTA) (16 U.S.C § 703-712). The DAF implements these regulatory statutes through development and implementation of installation Integrated Natural Resources Management Plans (INRMPs), Biological Assessments and subsequent Biological Opinions, and implementation of Wildland Fire Management Plans (WFMPs).

1.1.1 Background and Setting

The DAF established the AFWFB to supplement wildfire response, provide training, maintain certification, conduct program review, and provide technical assistance and expertise to all DAF installations and ancillary locations.

> The Air Force **Wildland Fire Branch** collaborates with the US Fish and Wildlife Service, the Bureau of Land Management, Colorado State University, and the University of Montana.

The AFWFB focuses on fire threats using risk-based data and maximizing shared resources. The AFWFB follows the vision, national goals, and guiding principles of the National Cohesive Wildland Fire Management Strategy. Its mission is to ensure military mission capability and readiness through a strategic, cost-effective, wildland fire organizational structure that provides ecosystem management, promotes long-term range sustainment, leverages partnerships, and provides key fire-related information to decision makers.

The headquarters of AFWFB, located at Joint Base San Antonio (JBSA)-Randolph, Texas, provides national oversight, operational risk management, policy development, corporate program management, interagency agreements, and centralized wildland fire management on DAF lands.

The AFWFB has three regional offices, established at:

- Eglin Air Force Base (AFB), Florida
- Cheyenne Mountain Space Force Station, Colorado
- Vandenberg AFB, California

In addition, 14 Wildland Support Modules (WSMs) have been established and report to the 3 regional offices. These teams are trained and equipped for wildland fire management, either on a seasonal or full-time basis based on local conditions outlined in installation WFMPs. As part of the AFWFB mission, these teams reduce and maintain fuel loads that pose a potential fire risk to DAF-managed lands. DAF installations and their associated WSMs are shown on **Figure 1-1**. A list of DAF-managed installations and ancillary locations is provided in **Appendix A**.

A **Wildland Support Module** consists of:

- An average of 6 to 12 National Wildfire Coordinating Group qualified wildland firefighters
- Wildland fire engines, utility task vehicles, heavy equipment, hand tools, and related gear
- Administrative space and storage for equipment and vehicles

Figure 1-1 Locations of Department of Air Force Wildland Fire Branch Wildland Support Modules and Associated Installations

1.2 PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is to manage fuel loads to reduce the risk of wildfires that may impair mission capabilities. One of the main goals is to create vegetation conditions similar to those that occurred historically when low-intensity fires naturally thinned ecosystems. This goal is accomplished by changing the size and structure of vegetation to create breaks in vegetation continuity. The Proposed Action would allow for a full spectrum of fire management activities, protect built and natural infrastructure, increase mission training opportunities, enhance aircrew readiness, and maintain mission capabilities. Reducing and managing fuel loads would allow for mission sustainment and build ecosystem resilience that promotes both ecological biodiversity and sustainability, resulting in protection of natural and cultural resources.

1.3 NEED FOR THE PROPOSED ACTION

Existing fuel loads, combined with other factors such as insect damage, invasive plant species, and prolonged drought, can increase the threat of large-scale wildfires. Increased threat of wildfires can reduce mission capabilities, impair aircrew readiness, compromise ecosystem resilience, and potentially result in a loss of critical resources. The need for the Proposed Action is to reduce and continuously manage fuel loads to protect and enhance built and natural infrastructure, natural resources, and cultural resources, promoting resilient ecosystems to support mission sustainment. Reducing and managing fuels is also needed to reduce adverse impacts of wildland fires.

1.3.1 Decision to Be Made

This Programmatic Environmental Assessment (PEA) analyzes potential environmental consequences associated with reducing and managing fuels on DAF-managed lands. Based on the analysis in this PEA, the DAF will make one of three decisions regarding the Proposed Action: (1) determine that the potential environmental impacts associated with the Proposed Action and alternatives are not significant and sign a Finding of No Significant Impact (FONSI) and Finding of No Practicable Alternative (FONPA); (2) initiate preparation of an Environmental Impact Statement (EIS) if it is determined that significant impacts would occur through implementation of the Proposed Action or alternatives; or (3) select the No Action Alternative, whereby the Proposed Action would not be implemented. As required by the National Environmental Policy Act (NEPA) and its implementing regulations, preparation of an environmental document must precede final decisions regarding the proposed project and be available to inform decision-makers of potential environmental impacts.

1.4 SCOPE OF THIS PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

A **Programmatic EA** addresses general environmental issues and concerns at a broad policy or program level. It can reduce the need for, and scope of, project-specific reviews.

The DAF has prepared this analysis as a broad program-wide evaluation of fuels reduction and management. As a programmatic analysis, it is intended to support DAF installation-level programs by streamlining coordination and analysis. When a DAF installation has determined that NEPA analysis is required for a specific action, the action would be evaluated for coverage under this PEA.

If specific fuels reduction or management activities are outside the scope of this PEA, or would be expected to create impacts greater in magnitude, extent, or duration than those described in this PEA, then tiered NEPA documentation would be prepared for those specific activities.

This PEA will be used to inform decision makers and the public of potential environmental consequences of implementing the Proposed Action. The geographic scope of the PEA is DAF-managed installations and ancillary locations in the continental United States and Alaska (**Figure 1-1**). This PEA is a starting point for the NEPA process for developing and implementing new and ongoing fuels reduction and management on DAF-managed lands. It provides a checklist that DAF installation personnel can use to complete the applicable NEPA documentation for WFMPs. Implementation of WFMPs may require additional NEPA documentation tiered from this PEA. The DAF implementing regulations for NEPA (32 Code of Federal Regulations [CFR] Part 989) require completion of either an Air Force Form 813, *Request for Environmental Impact Analysis* (if the PEA adequately analyzes potential environmental effects of implementing the plan or plan update) or a supplemental environmental assessment (if potential impacts on resource areas are not adequately addressed in this PEA). Resource areas analyzed in the PEA are biological resources, water resources, earth resources, cultural resources, hazardous materials, human health and safety, air quality, noise, infrastructure, and environmental justice .

1.5 Interagency and Intergovernmental Coordination and Consultations

The DAF initiated interagency coordination during the scoping phase of this PEA in accordance with the requirements of NEPA (40 CFR § 1501.7(a)(1)). Scoping letters that provided a description of the Proposed Action and No Action Alternative were sent to stakeholders. **Appendix B** provides a list of stakeholders and copies of correspondence.

Council on Environmental Quality (CEQ) regulations direct agencies to involve the public in preparing and implementing NEPA. The DAF published a notice of availability of the Draft PEA in the *USA Today* and *San Antonio Express-News* newspapers. The notice indicates availability of the Draft PEA for a 45-day review and comment period on the internet at: https://www.afcec.af.mil/Home/Environment/National-Environmental-Policy-Act-Center. One public comment was received and was considered in preparing this PEA and is provided in **Appendix B**.

This PEA uses previous agency and government-to-government consultations with federally recognized tribes to guide the analysis and, since the analysis in this PEA is programmatic in nature, no consultations specific to this analysis were conducted. If an installation conducts a separate tiered NEPA analysis for a specific fuels reduction or management action, then specific agency and government-to-government consultations with federally recognized tribes may be necessary. Generally, consultation with the US Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) would be necessary for projects that may affect federally listed species protected under the ESA, or bald or golden eagles protected under the Bald and Golden Eagle Protection Act (BGEPA). Consultation with the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA) would be necessary for activities that would potentially alter or affect wetlands or other waters of the United States. Consultation with the State Historic Preservation Officer (SHPO) would be necessary if cultural resources would potentially be affected. See **Appendix B** for a graphical depiction of typical fuels reduction or management activities that may require agency consultation.

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CHAPTER 2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION (ALTERNATIVE 1)

This section of the PEA describes details of the Proposed Action, alternatives considered to meet the purpose and need of the Proposed Action, and how alternatives were evaluated or screened against selection standards. The DAF proposes to implement a wide range of fuels reduction and management activities on DAF-managed lands in accordance with the *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDA, 2001), DoDI 4715.03, *Natural Resources Conservation Program,* and AFMAN 32-7003, *Environmental Conservation*.

Fuels treatments to remove undesirable vegetation and to establish or encourage expansion of desirable vegetation would be implemented year-round under a Memorandum of Understanding between the DoD and the USFWS (DoD and USFWS, 2014), which includes best management practices (BMPs) to protect migratory birds. Growing season treatments would be conducted as needed to achieve a desired response. Treated vegetation would be burned in place, recycled on site, incinerated on site using a portable incinerator, or hauled to a landfill. Typical fuels reduction and management activities are described in the following subsections. While described separately, these methods would often be used in conjunction with each other. The flexibility to use multiple treatment methods allows more effective management and use of appropriate treatments on a site-specific basis.

> Note: **Aerial methods**, including for application of herbicides and devices such as helitorches and plastic sphere dispensers for implementation of prescribed fire, are not included in this analysis.

2.1.1 Prescribed Burns

The DAF is proposing to conduct prescribed burns alone, or in conjunction with other treatment methods, as necessary to meet the Wildland Fire Management goals outlined in AFMAN 32-7003. The current 5-year rolling average goal is to burn between 160,000 and 200,000 acres per year.

Photograph 1. Prescribed Fire at Melrose Air Force Range, New Mexico

Prescribed burns are fires that are intentionally set under carefully planned conditions to accomplish specific management objectives. While prescribed burning can be an effective and relatively inexpensive tool for mitigating wildland fire fuel hazard, it can also dispose of logging residue, rejuvenate herbaceous vegetation, remove undesirable vegetation, help control insect and disease infections, enhance wildlife habitat, and preserve landscape diversity. Fire is also a required ecological process for some species to reproduce. Categories of prescribed burns include broadcast burns, hand pile burns, jackpot burns, and machine pile burns.

Prescribed burning can be a useful tool to reduce fuel loads over relatively large areas by converting combustible vegetative material into non-combustible material through use of fire. This method is especially effective in reducing surface and ladder fuels, which greatly inhibits fire's ability to climb into forest canopy. Surface and ladder fuels include plant material that is alive or dead and range from dead branches and leaves to small trees and shrubs. Prescribed burning consumes this vegetation on site, leaving non-combustible material that can be recycled into soil to provide nutrients and improve soil structure.

Careful planning is necessary to successfully execute a prescribed burn. The NWCG has developed national interagency standards for planning and implementing prescribed fire (NWCG, 2022). The first step in planning a prescribed fire is to prepare a comprehensive burn plan. The plan is created using the following guidelines: *NWCG Standards for Prescribed Fire Planning and Implementation* (NWCG PMS 484) and *NWCG Prescribed Fire Plan Template* (PMS 484-1). In addition, PMS 424-1 *Prescribed Fire Summary and Final Complexity Worksheet* is used for determining burn complexity. This plan details specific objectives, location, burn prescription, weather parameters, staffing and equipment, ignition plan, mop-up and monitoring procedures, and public notification requirements. It addresses smoke management, including identification of sensitive receptors such as towns, highways, airports, and hospitals, to predict favorable burn conditions that would likely minimize impacts from smoke. The plan is a legal document that provides the DAF with the information needed to approve the plan, and the Prescribed Fire Burn Boss with the information needed to implement the prescribed fire.

Asset protection, including hand and mechanical removal of fuels close to assets, occurs prior to the prescribed burn. Fire-retardant chemicals (such as Phos-chek) may be used to protect assets from prescribed fire. They are generally applied up to 48 hours in advance of the prescribed burn, but some allow for application annually.

Prescribed burns involve a range of activities, technologies, and equipment. **Figure 2-1** depicts the typical sequence of steps involved in prescribed burns. **Table 2-1** outlines the planning and implementation steps, as well as key resources needed for a prescribed burn.

Figure 2-1 Typical Prescribed Burn Steps

Table 2-1 Typical Prescribed Burns Process and Resources

Steps	Tasks and Subtasks	Key Resources [1]
Complete Work Order – AF Form 332	not applicable	not applicable
Planning and Coordination	Develop Prescribed Fire Plan (to include the 20 elements in PMS-484): • Define burn units and objectives based on Wildland Fire Management Plan • Identify facilities/resources that require protection and plan for protection • Identify safety hazards and prescribe mitigation measures • Inform and coordinate with appropriate entities (other base units, local governments and communities) • Identify contingency plan • Define/develop weather and environmental prescription parameters • Conduct fire behavior modeling • Obtain ignition authorization • Conduct smoke plume modeling • Determine minimum number of personnel, necessary NWCG qualifications, and required equipment • Identify and construct fire breaks and control lines	not applicable
Pre-Burn Preparation	• Prepare/refresh existing firebreaks/control lines and fuel breaks – (handline, wet line, disc line, mechanical lines, roads, ridges, rivers, and other natural fuel breaks) using mechanical or chemical methods of vegetation removal • Establish new control lines and fuel breaks • Establish water sources as appropriate • Prep facilities/resources identified for protection • Ensure accessibility for personnel and equipment • Identify and communicate safety hazards • Install appropriate road signage • Obtain day-of-burn authorization (local requirements)	• dozer or tractor with plow or disc capabilities • PPE • skid steer and attachments • amphibious tracked vehicle with plow or disc capabilities • chain saws • pole saws • brush cutters • string trimmers • leaf blowers • hand tools

Table 2-1 Typical Prescribed Burns Process and Resources (continued)

Steps	Tasks and Subtasks	Key Resources [1]
Pre-Burn Preparation *(continued)*	• Conduct day-of-burn smoke modeling • Obtain NWS Spot Weather Forecast if available • Establish communication plan • Work planning prescribed burn planning with local and regional USEPA Clean Air Act officials to minimize impact to airshed's PM1.5 and PM10 limits	• water tender (750-gallon minimum capacity) • ATVs/UTVs
Prescribed Fire Implementation	• Determine if environmental conditions are within fire plan prescription parameters according to prescribed fire plan • Brief prescribed burn objectives, operational plan, communication plan, safety protocols: hazards, medical plan, and contingency plan with all on-site personnel • Verify communication channels are functioning properly • Conduct test fire • Implement ignition plan • Continuously assess whether burn objectives are being met and adjust necessary • Continuously monitor smoke output and impact • Work planning prescribed burn planning with local and regional USEPA Clean Air Act officials to minimize impact to airshed's PM1.5 and PM10 limits.	• dozer or tractor with plow or disc capabilities • PPE • skid steer and attachments • amphibious tracked vehicle with plow or disc capabilities • chain saws • pole saws • brush cutters • string trimmers • leaf blowers • hand tools • water tender (750-gallon minimum capacity) • ATVs/UTVs • radios • ignition devices (e.g., Terra Torch) • drip torch mix • fire engines • brush trucks • portable water pumps • fire hose • portable water tanks • mobile repeater • NWS Spot Weather Forecast

Table 2-1 Typical Prescribed Burns Process and Resources (continued)

Steps	Tasks and Subtasks	Key Resources [1]
Prescribed Fire Implementation *(continued)*		• remote weather station • belt weather kit • Kestrel weather meters • on-site weather station • supply water tender
	Monitor weather	• remote weather station • beltweather kit • Kestrel weather meters • on-site weather station
	Implement holding plan to keep fire in the burn perimeter	• engines • portable water tanks and pumps • same equipment listed above for prescribed fire implementation
Post-Burn Closure Activities	Assess whether burn objectives have been met	• ArcGIS mapping tools
	Monitoring (pre-burn, during, and post-burn) using established photo plots	• ATVs/UTVs • office supplies • cameras • ground-based LiDAR equipment • tablets • GPS • scales
	Demobilization: • Remove hydrant/portable water tank • Remove signs • Remove or mitigate overhead hazards (e.g., snags adjacent to control line)	• ATVs/UTVs • trucks

Table 2-1 Typical Prescribed Burns Process and Resources (continued)

Steps	Tasks and Subtasks	Key Resources [1]
Post-Burn Closure Activities *(continued)*	Site Stabilization: • Stabilize treated area as planned/necessary (e.g., replace soil on firelines, seeding, no-till drill, hydroseeding, erosion fencing or wattles)	• spreaders • ground-based LiDAR • drying ovens • trucks
	Mapping, data collection, and reporting: • Complete necessary reporting, including as necessary, mapping and size and intensity of fire	• office supplies

Notes:
Source: DAF, 2023.
[1] A range of potential vehicles and types of heavy equipment available to Wildland Support Modules is included as **Appendix C**.
ATV = all-terrain vehicle; GPS = global positioning system; LiDAR = Light Detection and Ranging; NWCG = National Wildfire Coordinating Group; NWS = National Weather Service; PPE = personal protective equipment; UTV = utility task vehicle

2.1.2 Mechanical Treatment

Mechanical treatment involves use of heavy equipment specialized to reduce fuel loads, rearrange fuel structure, and remove undesirable species in areas where prescribed fire is not a viable option. Use of mechanized equipment to reduce the risk of fire is most effective where the area to be treated is moderate in size, as defined in the appropriate Wildland Fire Management Plan, and slopes are not too steep (not greater than 30 percent). Mechanical removal can include removal of large-diameter trees as defined in applicable Forest Management Plans or INRMPs as non-commercial value timber. The current goal is to mechanically treat a 5-year rolling average of between 1,000 and 10,000 acres per year.

Mechanical treatments reduce ladder and canopy fuels by removing, masticating, grinding, mashing, or piling vegetation for later burning. Disposal of removed vegetation is accomplished by either on-site disposal or removal of materials to landfills. The priority is disposal of the material in an economically responsible way with low environmental impact or that best meets project objectives. If recycling on site is not possible, then materials are burned on site, either through broadcast burning or pile burning, or using an air curtain burner. The goal is to take minimal amounts of removed materials to local landfills for disposal.

Various types of equipment and methods can be used, depending on the desired outcome. The major types of equipment may include but are not limited to:

- Skid steers and masticators to cut and masticate small and medium-sized trees, remove and pile brush, and move piles of cut material for pile burning or removal.
- Feller bunchers to cut individual trees and remove the main boles off site to increase distance between canopy trees. Branches and treetops are usually lopped and scattered or piled and burned.
- Brush hogs, mowers, masticators, and grinders/chippers to masticate shrubs and small trees, reducing ladder fuels.

- Tractors or dozers to both remove canopy trees and reduce ladder fuels, although not as precisely as the equipment mentioned above. Dozers knock over or pull up trees and shrubs, increasing the distance between canopy trees and reducing ladder fuels. The treated vegetation can be either scattered or piled and burned. This method is frequently used to prepare or maintain a protective fire line around an area, including in conjunction with planned prescribed burns.

Photograph 2. Mechanical Treatment at Kirtland Air Force Base, New Mexico

Table 2-2 provides a list of typical mechanical removal tasks and equipment. See **Appendix C** for a range of vehicles and heavy equipment that could be used at each of the WFMs.

Table 2-2 Typical Mechanical Removal Activities and Resources

Steps	Tasks and Subtasks	Key Resources [1]
Work Order AF Form 332	not applicable	not applicable
Resource Planning and Coordination	Removal Plan	Wildland Fire Management Plans
Mechanical Treatment Implementation	Mechanical removal of vegetation Disposal of removed vegetation • Clear cutting or thinning of live timber or removal of ladder fuels	• roller chop • skid steer • ATVs/UTVs (steel track, rubber track, and tires) • trucks • tractor • bulldozer • PPE • on-site incinerator • chain saws

Table 2-2 Typical Mechanical Removal Activities and Resources (continued)

Steps	Tasks and Subtasks	Key Resources [1]
Mechanical Treatment Implementation *(continued)*		• wood chipper • skidder • mulcher • drum-head masticator/cutter/chopper • hydro-ax • feller-buncher • root rake
Closure Activities	Assess whether objectives have been met	not applicable
	Monitoring: • Pre-site work, during, and after using established photo plots	• ATVs/UTVs • cameras • office supplies • tablets • GPS • scales • Wildland Fire Branch Monitoring Guide or other Natural Resources Monitoring Plan
	Demobilization: • Hydrant/portable water tank removal, sign removal	• trucks • ATVs/UTVs
	Site Stabilization: • Stabilize where planned/necessary (replace soil, mulching, seeding, no-till drill, hydroseeding, erosion fencing or wattles)	• ATVs/UTV • Spreaders
	Mapping, data collection, and reporting	• office supplies

Notes:
Source: DAF, 2023.
[1] A range of potential vehicles and types of heavy equipment available to Wildland Support Modules is included as **Appendix C**.
ATV = all-terrain vehicle; GPS = global positioning system; PPE = personal protective equipment; UTV = utility task vehicle

2.1.3 Hand Treatment

Hand treatment involves crews using hand tools and hand-operated power tools for cutting and digging to remove vegetation. Examples include, but are not limited to, rakes, axes, hoes, shovels, chainsaws, machetes, pulaskis, brush cutters, pulleys, chain ladders. See **Appendix C** for a range of vehicles and heavy equipment that could be used at each of the WSMs.

Photograph 3. Hand Removal at Joint Base San Antonio-Lackland, Texas

Hand removal is generally used in fragile ecosystems and soils and with vegetation that is easy to remove. Activities are conducted in coordination with natural resource staff to minimize disturbance and avoid habitats for protected species. This method is best used for smaller areas, as it is labor intensive and costly. Hand removal is often used in conjunction with other methods in areas where slopes are too steep or inaccessible to equipment, or priority resources need to be protected.

2.1.4 Chemical Treatment

The DAF uses chemical treatment (herbicides) to kill undesirable vegetation. Herbicide treatments are conducted by licensed applicators in accordance with AF 32-1053, *Integrated Pest Management*, and in accordance with manufacturer specifications as approved by the US Environmental Protection Agency (USEPA). This method is used to reduce the amount of fuels, generally before a prescribed burn, but also when a site is not easily accessible by machines or conditions are not conducive to prescribed fire. An array of chemicals and application methods can treat surface, ladder, and canopy fuels. Chemical type depends on vegetation to be treated and the need to protect sensitive areas. All chemicals used are registered with the USEPA and carry federally approved labels describing permitted uses and appropriate protection, storage, handling, and application measures.

Application methods would vary depending on the size, species, and environmental considerations of the treatment area but would be limited to ground application methods such as backpack sprayer and utility task vehicle (UTV) or track-based methods. Chemicals are applied on foliage, injected into the stem or base, or into the cut stump. This method treats surface vegetation, ladder fuels (small trees and shrubs), and canopy trees. Chemicals are often more effective when used in conjunction with other treatment types, such as mechanical and hand removal. Aerial application of chemicals is not included in this PEA.

2.1.5 Targeted Grazing

Targeted grazing uses livestock such as goats, sheep, cattle, and horses, intensively managed by a grazing operator, to consume targeted vegetation in a specific area. Note that this treatment method serves a different purpose than the DAF grazing lease program, both of which are addressed in the appropriate INRMP. The livestock would consume ground vegetation (grass and shrubs) and lower tree branches. To meet treatment objectives, methods used to manage livestock such as monitoring their numbers, fencing versus herding, and using water and mineral supplements, would be identified at the site-specific level. Temporary fencing may be used to limit grazing to the footprint of a proposed treatment area. Most of the equipment — fencing, water troughs, and other equipment — is provided by the grazing operator. The DAF may provide water. The grazing operator may stay on site in a trailer and provide guard animals such as dogs or llamas. Water sources (streams or wetlands) would be protected from grazing by fences or other barriers in accordance with local Natural Resources Conservation Service field office technical guides. Sunset clauses for targeted grazing would be addressed at the site-specific level.

Photograph 4. Targeted Grazing at Travis Air Force Base, California

The targeted grazing process would involve the same main steps as other treatment methods. **Table 2-3** outlines these steps and typical equipment used.

Table 2-3 Typical Targeted Grazing Activities and Equipment

Steps	Tasks and Subtasks	Key Resources [1]
Work Order AF Form 332	not applicable	not applicable
Resource Planning and Coordination	Grazing Plan– internal DAF coordination for resources	not applicable
Grazing Implementation	Installation of fencing and water troughs	• trucks • ATVs/UTVs • fencing • water troughs

Table 2-3 Typical Targeted Grazing Activities and Equipment (continued)

Steps	Tasks and Subtasks	Key Resources [1]
Closure Activities	Assess whether objectives have been met	not applicable
	Monitoring: Pre-site work, during, and after using established photo plots	• ATVs/UTVs • cameras • office supplies
	Complete necessary reporting	• office supplies
	Demobilization: Remove portable water tank and signs	• trucks • ATVs/UTVs
	Site Stabilization: Stabilize where planned/ necessary (replace soil, mulching, seeding, no-till drill, hydroseeding, erosion fencing or wattles)	• ATVs/UTVs • spreaders
	Mapping and data collection, reporting	• office supplies

Notes:
Source: DAF, 2023.
[1] A range of potential vehicles and types of heavy equipment available to Wildland Support Modules is included as **Appendix C**.
ATV = all-terrain vehicle; UTV = utility task vehicle

2.1.6 Removal Methods Not Covered

Several fuels reduction and management methods are outside the scope of this analysis. Those methods include aerial treatments (including prescribed burn aerial operations), biological (pathogenic and insects), and use of chemicals other than herbicides. If these methods are considered, then the DAF would conduct additional environmental analysis to supplement this PEA.

2.2 SELECTION STANDARDS

In accordance with 32 CFR § 989.8(c), the DAF developed selection standards to establish a means for evaluating the reasonableness of an alternative and whether an alternative should be carried forward for further analysis in the PEA. Consistent with 32 CFR § 989.8(c), the following selection standards meet the purpose of and need for the Proposed Action and were used to identify reasonable alternatives for analysis in the PEA. Alternatives to the Proposed Action were evaluated based on the following selection standards:

- Increase the ability to manage wildfire caused by DAF mission.
- Reduce the adverse impacts of wildland fires.
- Protect the built and natural infrastructure and enhance ecosystem resilience.
- Maintain and enhance mission capabilities.
- Improve fire management capabilities and safety.
- Be cost effective and efficient.

2.3 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

Wildland fire management strategies presented in the *Review and Update of the 1995 Federal Wildland Fire Management Policy* (USDA, 2001); DoDI 4715.03, *Natural Resources Conservation Program;* and AFMAN 32-7003, *Environmental Conservation* are interim guidance approved and widely used on DAF-managed lands nationwide. Based on the purpose and need for the Proposed Action and selection standards, only the Proposed Action (Alternative 1) and the No Action Alternative will be carried forward for analysis in this PEA.

2.3.1 Alternative 1

Alternative 1, described in more detail in **Section 2.1**, outlines an approach to fuels reduction and management that protects the DoD mission and resources, while promoting ecosystem management and reducing fuel loads. The DAF proposes to implement a full suite of fuels reduction and management methods as deemed appropriate on DAF-managed lands. These methods comply with all applicable federal regulations, state regulations, and permitting requirements. Implementation of Alternative 1 would ensure that a programmatic approach to fuels reduction and management is used to optimize both mission protection and ecosystem management.

2.3.2 No Action Alternative

CEQ regulations require that an agency "include the alternative of no action" as one of the alternatives it considers (40 CFR § 1502.14[d]). The No Action Alternative is included to describe potential future conditions if no action is taken to reduce or manage fuels loads. Existing fuel loads could increase the threat of large-scale wildfires, reducing mission capabilities, impair aircrew readiness, compromise ecosystem resilience, and potentially result in a loss of critical resources. Under the No Action Alternative, the DAF would conduct site-specific environmental analysis for fuels reduction and management activities.

2.4 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD FOR ANALYSIS

2.4.1 Utilize Reimbursable Conservation Programs

In addition to the methods described above, the DAF considered using the Reimbursable Conservation Program as another tool for fuels reduction and management. This program is often part of a Fuels Load Reduction Program. The program generates funds from the sale of forest products, agricultural products, grazing, and cropland outgrants. Agricultural outgrants are conducted on lease-eligible DAF-managed land for agricultural purposes, such as crop production, livestock grazing, equestrian operations, and commercial seed harvesting. These tools are not being carried forward for analysis in this PEA because, although the fuels management aspect is a beneficial side effect of these activities, it is not their primary purpose. This program alone would not meet the objectives of fuels management.

Specific reimbursable programs considered as alternatives for implementing the Proposed Action are briefly described below.

2.4.1.1 Grazing

This alternative would consist of offering grazing units on DAF-managed land for domestic livestock. While grazing programs currently exist on several bases, including Beale AFB and

Travis AFB in California, Mountain Home Range Complex in Idaho, and Avon Park Air Force Range in Florida, these programs are not managed specifically to reduce or manage fuels. This alternative was not carried forward because it would not be ecosystem protective, results are likely to be inconsistent, and it may not effectively remove small fuels.

2.4.1.2 Timber Harvest

Forest management programs, including commercial timber harvest, are currently being utilized on DAF-managed lands, including Arnold AFB, Tennessee; Eglin AFB, Florida; Kirtland AFB, New Mexico; and at the US Air Force Academy, Colorado. Additional commercial timber harvest for fuels reduction and management was not carried forward as an alternative because it would not be ecosystem protective and it would not effectively remove small fuels.

2.4.1.3 Biomass Harvest

Biomass refers to all above-ground plant and animal material. Because these materials are typically left on the ground, biomass harvesting represents a broadening of materials that can be used. Using biomass to produce electricity is one of the most expensive renewable energy options, and the low demand for biomass make this option infeasible. Therefore, this alternative was not carried forward.

2.5 Best Management Practices

A BMP is a practice or combination of practices used to prevent or minimize potential adverse impacts on environmental resources. Note that BMPs are not mitigation measures designed to mitigate identified adverse effects; rather, they are practices the DAF uses as part of the Proposed Action to avoid and reduce the potential for adverse impacts. During the Proposed Action, the DAF would continue to follow numerous BMPs, including all NWCG standards, National Association of State Foresters BMPs, and all federal, state, and local regulations.

The NWCG standards, available at https://www.nwcg.gov, establish common practices and requirements that enable efficient and coordinated national interagency wildland fire operations. These standards may include guidelines, procedures, processes, best practices, specifications, techniques, and methods. Following these standards would avoid and minimize impacts to the environment. The DAF would also continue to follow all BMPs outlined by the National Association of State Foresters, available at https://www.stateforesters.org/bmps. These mandatory BMPs, used to protect water quality during timber harvests and other forest management activities, include such topics as stream protection zones, culverts, use of chemical and petroleum products, invasive species, cultural resources, soil productivity, water quality, revegetation, and stabilization.

The DAF must also comply with all federal, state, and local regulations related to environmental protection. For example, the DAF would consult with the SHPO under Section 106 if cultural resources may be affected, and consult with the USFWS or NMFS under Endangered Species Act Section 7 if federally listed species may be affected. If potentially jurisdictional water resources may be affected, federal regulations require a permit under Section 404 of the CWA, and most states also require permits. These regulatory processes ensure that all potential effects are analyzed and minimized. Examples include permit stipulations that require setbacks from riparian areas to protect waterways, and limits on work periods outside nesting or breeding seasons.

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CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the affected environment, also called existing conditions, for each resource area and evaluates the environmental consequences of the Proposed Action and the No Action Alternative. As a programmatic document, this PEA considers a broad program-wide evaluation of the suite of fuels reduction and management activities that could be implemented (see **Section 2.1**). The impact analysis presented in this PEA is a general discussion of potential impacts to resources under the Proposed Action and No Action Alternative. Installations would evaluate potential environmental impacts to all resources from implementation of specific fuels treatments. If the evaluation reveals that an activity is consistent with the scope and potential impacts analyzed in this PEA, then no further NEPA analysis is required before they are implemented. If the evaluation reveals that an activity is not fully analyzed in this PEA, or falls outside the scope of this PEA, then the installation will conduct a follow-on installation-specific NEPA analysis tiered from this PEA. The presence of ESA-listed species, historic properties, or other sensitive resources such as critical habitat or wetlands will likely trigger the need for additional analysis and mitigation. **Chapter 4** addresses the potential for cumulative effects. **Chapter 5** provides for more information regarding tiering, and resource-specific tiering thresholds are summarized in **Appendix D**. **Chapter 6** includes a list of the references sited. The list of preparers and contributors is in **Appendix H**.

3.1.1 Overview of Programmatic Approach and Section Organization

Climate change regulations and considerations related to fuels management are addressed in **Section 3.1.2**. Resources not carried forward for analysis are described in **Section 3.1.3**. Resource definitions and tiering thresholds are described in **Appendix D**.

3.1.1.1 Impact Evaluation Criteria

Potential effects were evaluated for each resource in terms of type, duration, and degree. Type describes whether impacts would be beneficial or adverse, and direct or indirect:

- *Beneficial:* A positive change in the condition or appearance of the resource, or a change that moves the resource toward a desired condition.
- *Adverse*: A change that moves the resource away from a desired condition, or detracts from its appearance or condition.
- *Direct:* An effect caused by the action that occurs in the same place and at the same time.
- *Indirect:* An effect caused by the action but occurs later in time or farther removed in distance, but is still reasonably foreseeable.

Duration describes the length of time an effect would occur, either short-term or long-term. Short-term generally describes effects that would be experienced during the fuels treatments, and long-term refers to effects that would persist after the treatments are completed. Degree describes the intensity, level, or relative strength of the effects. Further descriptions of the criteria used to evaluate impacts are included in the environmental consequences sections of each resource.

3.1.1.2 Fire Regime Groups

The Landscape Fire and Resource Management Planning Tools (LANDFIRE) fire regime group (FRG) divides vegetation into five FRGs based on a wildfire frequency and severity scale.

A **fire regime** is a description of generalized patterns of fire occurrence, frequency, size, severity, vegetation, and fire effects in a given area or ecosystem (NWCG, 2018).

The scale was established by the National Interagency Fuels, Fire and Vegetation Technology Transfer (NIFTT) and is summarized in **Table 3-1**. Fire regimes are often cyclical, and repetitions can be counted and measured to determine the fire return interval. Fire regimes are classified into FRG categories based on historical fire frequency and severity. FRGs commonly used includes five groups as defined in **Table 3-1** (NWCG, 2018). It is important to note that several FRGs may be present at each installation or DAF-managed land. The Wildland Fire Branch generally conducts the majority of its fuels treatments in FRG I.

To assist in the analysis of impacts to the biological and physical environment, data were downloaded from the LANDFIRE website at http://www.LANDFIRE.gov/index. The analysis process is described in detail in **Appendix E – Section E.4**.

LANDFIRE Biophysical Setting (BPS) data used to evaluate FRGs are presented in **Figure 3-1** for the Continental United States (CONUS) and **Figure 3-2** for Alaska.

Table 3-1 Fire Regime Groups in the Project Area (DAF-Managed Lands)

	FRG I	FRG II	FRG III	FRG IV	FRG V	XX (Unburnable)
Fire recurrence interval	0 and 35 years	0 and 35 years	35 and 200 years	35 and 200 years	200 years or more	NA
Fire severity	low-mixed	high	mixed or low	high	high	NA
Amount of dominant vegetation replaced	< 25%[1]	> 75%	25 to 75%	> 75%	> 75%	NA
Percent of the project area	40	24	9	11	12	6
Number of installations[2]	71	55	62	33	46	68
Acreage in the project area	816,863	238,684	153,960	745,909	3,877,759	1,804,356

Table 3-1 Fire Regime Groups in the Project Area (DAF-managed Lands) (continued)

	FRG I	FRG II	FRG III	FRG IV	FRG V	XX (Unburnable)
Installation with the largest acreage	Eglin AFB, FL 393,031 acres	Melrose AFR, NM 56,585 acres	Barksdale AFB, LA 10,471 acres	Vandenberg AFB, CA 66,479 acres	NTTR, NV 2,201,640 acres	UTTR, UT 808,985 acres

Notes:
Source: NIFTT, 2010 and DAF, 2023
[1] Can include mixed-severity fires that replace up to 75 percent.
[2] The total number of installations is 77.
AFB = Air Force Base; AFR = Air Force Range; CA = California; FL = Florida; FRG = fire regime group; LA = Louisiana; NA = not applicable; NM = New Mexico; NTTR = Nevada Test and Training Range; NV = Nevada; UT = Utah; UTTR = Utah Test and Training Range

Table 3-2 presents the associations between eight main vegetation types, the FRGs, Geographical Areas, and DAF installations. The installations included are those with the vegetation type as the dominant vegetation type on the installation. This table is included to give readers a general overview of the vegetation types, FRGs, Geographical Areas, and installations, and does not include all installations in the project area. See **Appendix A – Table A-1** for a complete list of the installations covered under this PEA.

Table 3-2 Vegetation and Fire Regime Group Associations

Vegetation Type	Fire Regime Groups	Geographic Locations	Selected Associated Installations	State
Grasslands	I and II	South Central	Altus AFB	Oklahoma
		Southeast	Eglin AFB	Florida
		Southwest	Dyess AFB	Texas
		Alaska	JBER	Alaska
		North Central	Ellsworth AFB	South Dakota
		Northeast	Dover AFB	Delaware
Shrublands	I, II, IV, V	Alaska	Eielson AFB	Alaska
		North Central	FE Warren AFB	Wyoming
		Northwest	Mountain Home AFB	Idaho
		South Central	Buckley AFB	Colorado
		Southwest	Davis Monthan AFB	Arizona
Hardwoods	I, II, III, IV	Alaska	JBER	Alaska
		North Central	Grand Forks AFB	North Dakota
		Northeast	JB Langley-Eustis	Virginia
		Southeast	Arnold AFB	Tennessee
		Southwest	Beale AFB	California
		South Central	Cheyenne Mountain Space Force Station	Colorado

Table 3-2 Vegetation and Fire Regime Group Associations (continued)

Vegetation Type	Fire Regime Groups	Geographic Locations	Selected Associated Installations	State
Hardwood-Conifer	I, III	Northeast	JB McGuire-Dix-Lakehurst	New Jersey
		Southeast	Keesler AFB	Mississippi
		South Central	JB Andrews	Maryland
Conifer	I, III, IV, V	Alaska	Eielson AFB	Alaska
		South Central	Cheyenne Mountain Space Force Station	Colorado
		Southeast	Eglin AFB	Florida
		Northwest	Fairchild AFB	Washington
		North Central	Ellsworth AFB	South Dakota
		Northeast	Cape Cod AFS	Massachusetts
Peatland Forest and Non-Forest	III, IV, IV	Alaska	Clear AFS	Alaska
			Eielson AFB	
			JBER	
Savanna	I, II	Southeast	Eglin AFB	Florida
Riparian	I, II, III, IV, V	Alaska	Eielson AFB	Alaska
		North Central	Ellsworth AFB	South Dakota
		Northwest	Fairchild AFB	Washington
		Northeast	Dover AFB	Delaware
		Southeast	Avon Park AFB	Florida
		Southwest	Edwards AFB	California

Notes:
Source: LANDFIRE, 2016 and DAF, 2023.
AFB = Air Force Base; AFS = Air Force Station; JB = Joint Base; JBER = Joint Base Elmendorf-Richardson

Vegetation Condition Class (VCC), also known as Fire Regime Condition Class , is an interagency standardized tool for assessing the degree of departure from reference condition vegetation, fuels, and disturbance regimes (NIFTT, 2010; LANDFIRE, 2016). For a description of the Fire Regime Conditions Classes see **Appendix E – Section E.4**. An installation-specific example of the BPS is provided in **Figure 3-3**, and the VCC for the same installation is shown in **Figure 3-4** for comparison. The resulting table of adjusted land classes occurring at DAF-managed lands is provided in **Appendix E – Table E-3**.

To provide a better representation of current (rather than historical) vegetation to use as the baseline condition, the LANDFIRE National Vegetation Classification (NVC) was incorporated into the analysis. It also identifies ruderal vegetation communities resulting from anthropogenic disturbance that do not conform to natural community structure or composition. The resulting table of Existing Vegetation Type NVC occurring on DAF-managed lands is provided in **Appendix E – Table E-4**. The NVC is hierarchical, with finer-scale units (such as California coastal redwood forests) nested within broader-scale units (for example, temperate forests, boreal forests, and woodlands). In this PEA, vegetation is described by NVC group, a mid-scale classification unit within the hierarchy.

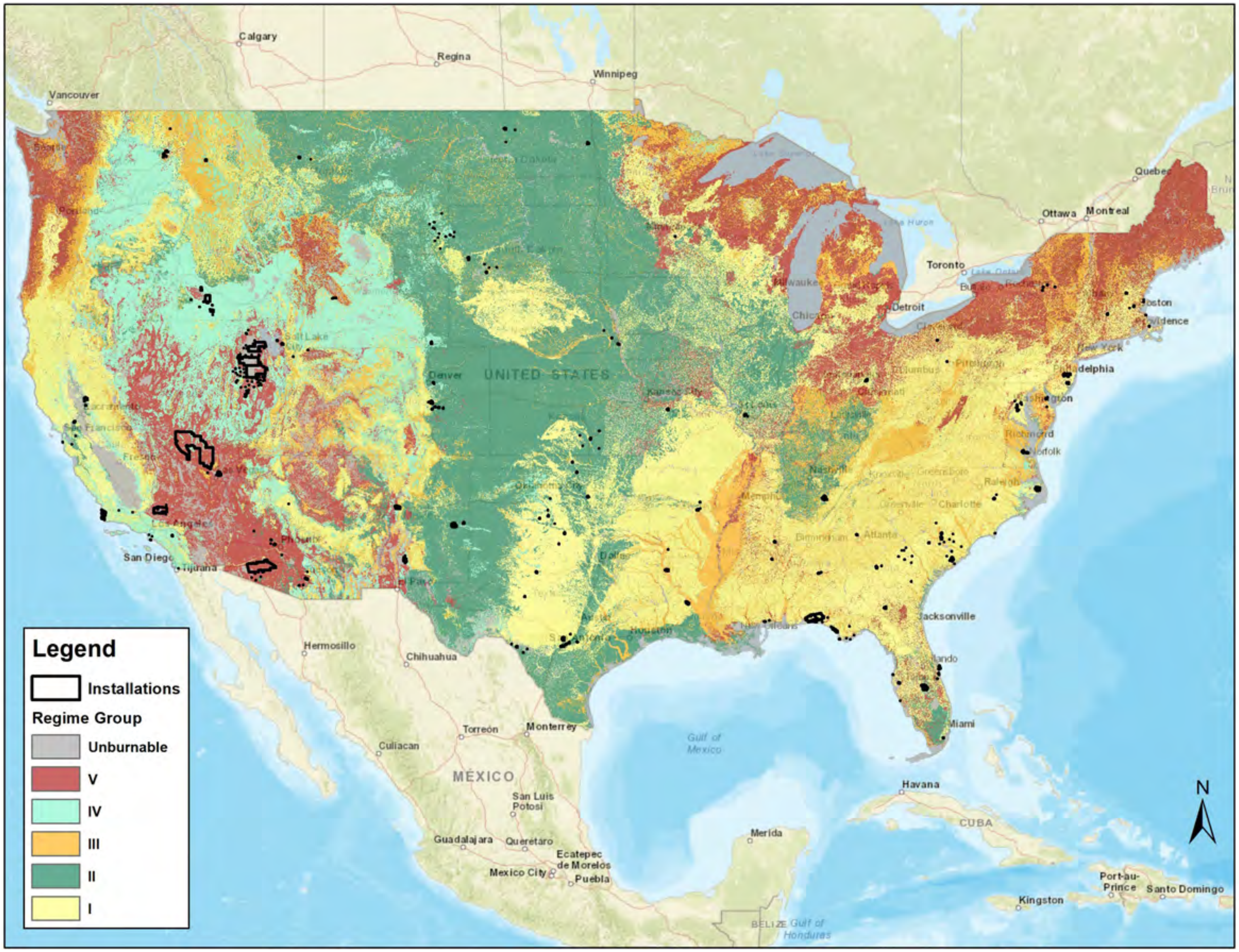

Figure 3-1 Fire Regime Groups in the Continental United States

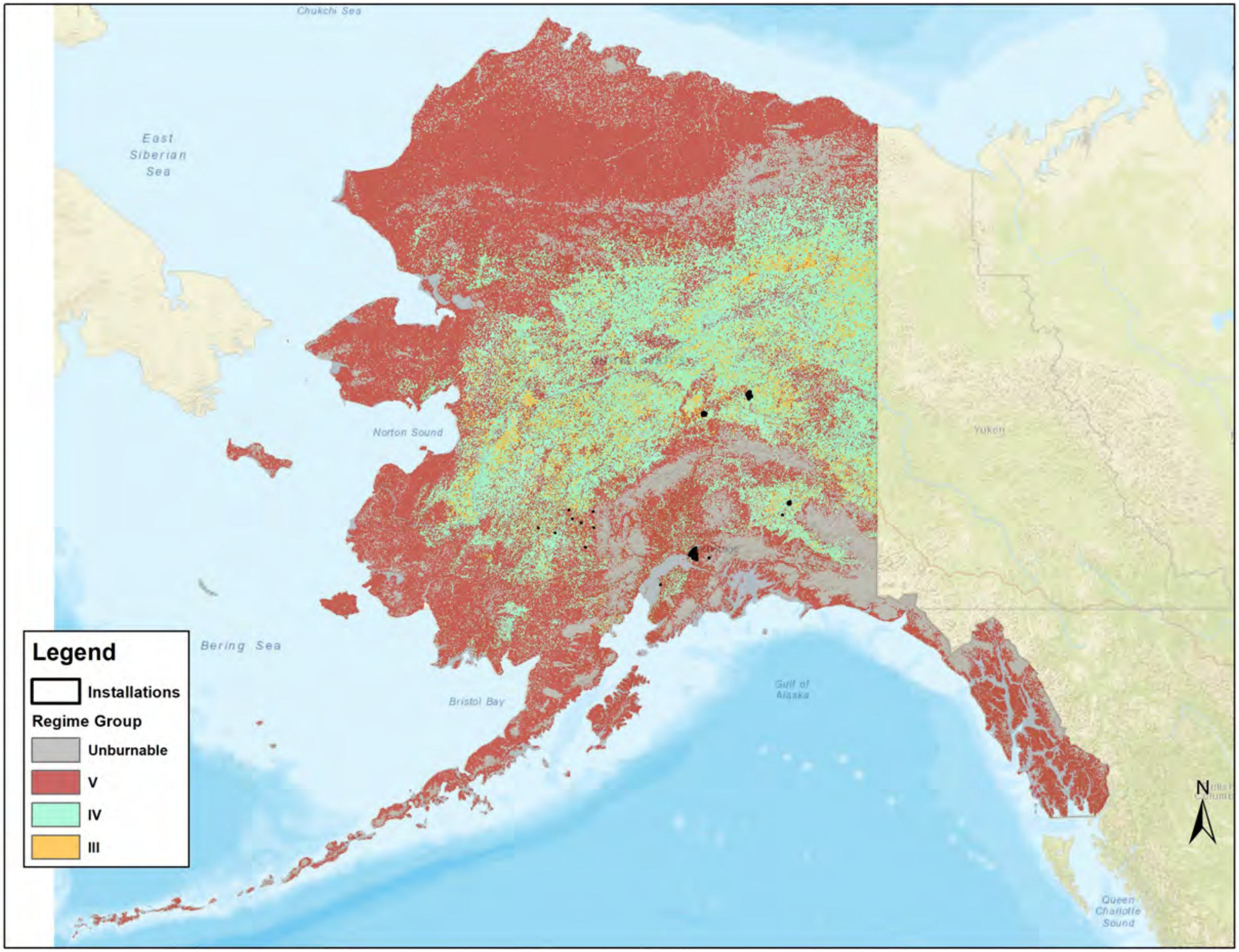

Figure 3-2 Fire Regime Groups in Alaska

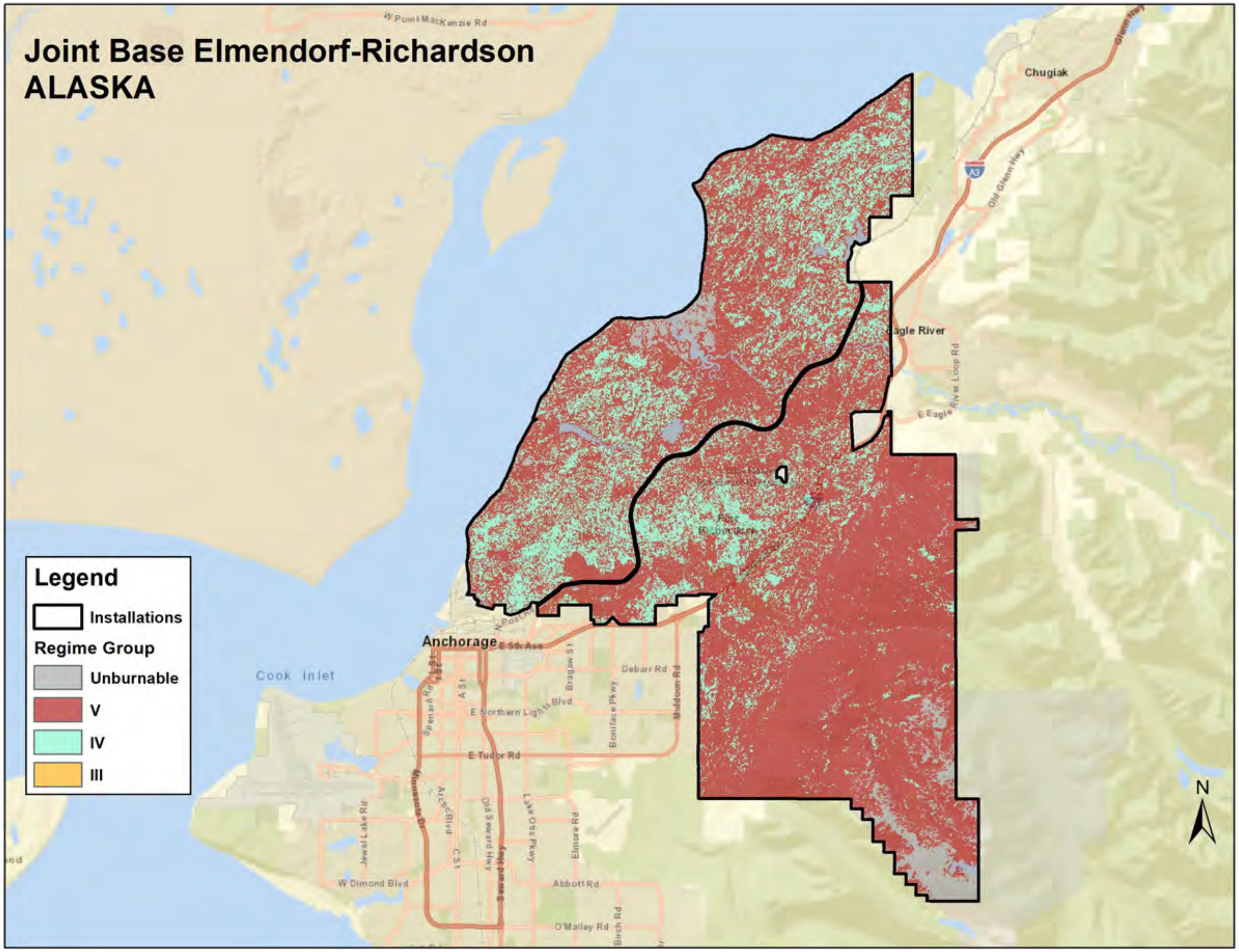

Figure 3-3 Fire Regime Groups Based on Biophysical Setting at Joint Base Elmendorf - Richardson, Alaska

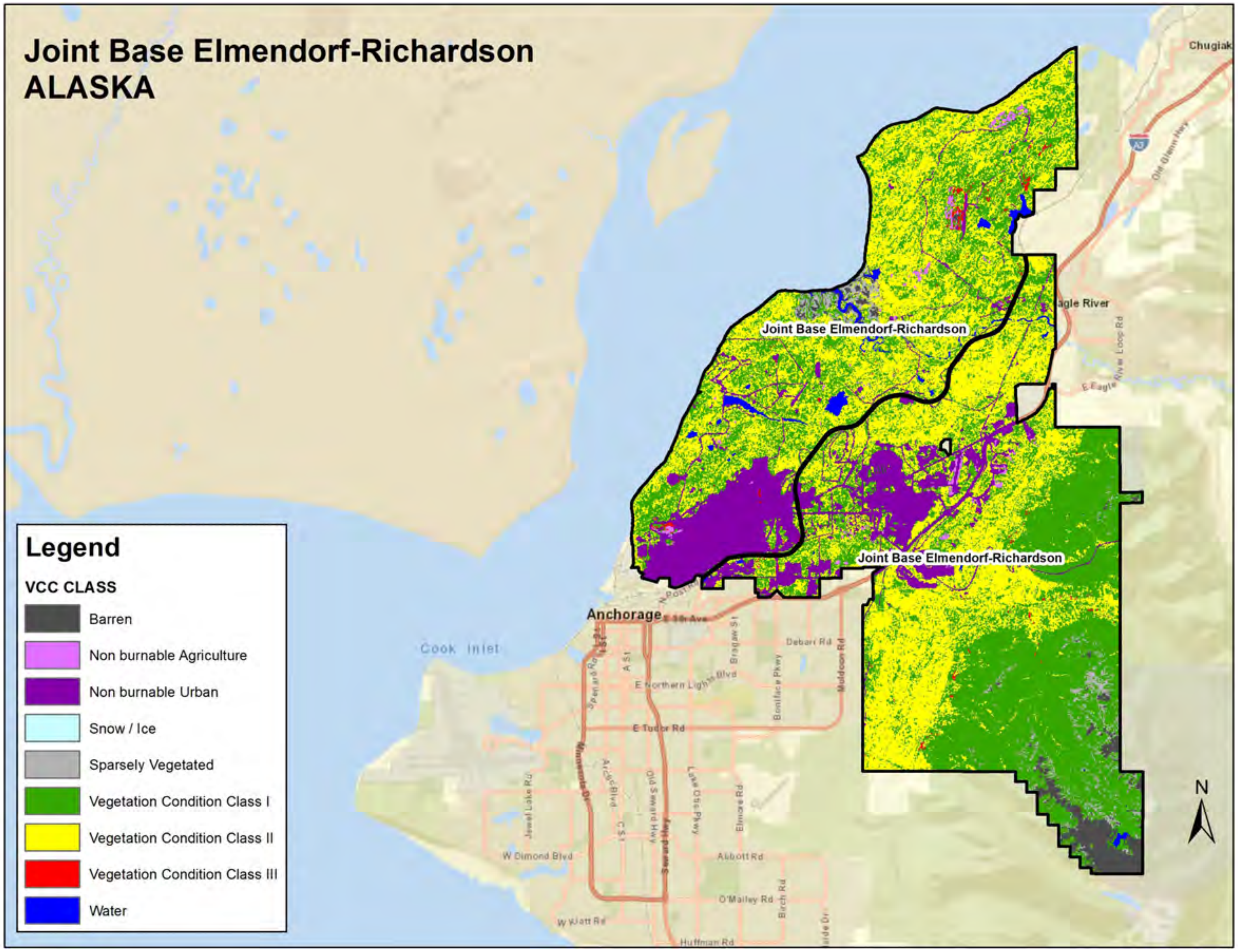

Figure 3-4 Vegetation Condition Classes and Nonburnable Land Cover at Joint Base Elmendorf - Richardson, Alaska

3.1.2 Climate Change

> One of the **key objectives of the AFWFB** is to assist installations adapt to climate change by building ecosystem resilience.

As described in more detail in **Appendix E – Section E.5**, climate change has caused many changes that increase the risk and potential size of wildfires. These changes include increased temperatures, shifts in precipitation patterns, increases in severe weather occurrence, and stronger winds. The USEPA (2023a) has compiled multiple studies showing that climate change has already led to an increase in wildfire season length, wildfire frequency, and burned area. The wildfire season has lengthened in many areas as a result of factors including warmer springs, longer summer dry seasons, and drier soils and vegetation. Earlier spring melting and reduced snowpack result in decreased water availability during hot summer conditions, which in turn contributes to an increased wildfire risk, allowing fires to start more easily and burn hotter. These trends of longer wildfire seasons and larger wildfire size are predicted to continue as more frequent and longer droughts occur. Longer and more frequent droughts may result in reduced vegetative growth, and therefore, less fuels. Climate change requires that the AFWFB be prepared to use adaptive management tools to promote resilient landscapes by reducing fuels to decrease the severity of fires so that the ecosystem can recover. Adaptive management is a systematic process to improve outcomes by continually adapting management actions based on results of past actions and changing conditions.

3.1.3 Resources Not Carried Forward for Analysis

The potential impacts to the following resource areas from implementation of the Proposed Action would be negligible or non-existent; as such, they were not carried forward for detailed analysis in this PEA.

3.1.3.1 Socioeconomics

The Proposed Action has the potential to create beneficial effects on the local economy adjacent to each DAF installation where fuels reduction would occur from purchase of materials, supplies, meals, lodging, and other ancillary expenses. However, such potential effects would be temporary (e.g., occurring over periods of a few days to a few weeks, at most), highly localized, and small within a regional, state, or national context. The Proposed Action would not be anticipated to substantively affect local demography, employment and income, tax revenue, housing, schools, or demand for public services because no new permanent employment positions would be created at the local, regional, state, or national level. Overall, the Proposed Action would have no or negligible effects on socioeconomic conditions in the vicinity of each installation where fuels treatments would be conducted. Therefore, this resource is not considered further in this PEA.

3.1.3.2 Land Use

The Proposed Action would be implemented in a manner that is consistent and compatible with existing land use and would not displace or impede continued operation of existing land uses or prevent planned or future land uses on or adjacent to areas where fuels treatments would be conducted. Land where the Proposed Action would be implemented would continue to be managed as it currently is, and any subsequent changes to land use type or management that may occur after fuels treatments would be addressed and evaluated separately from this PEA, as applicable. Therefore, land use is not considered further in this PEA.

3.1.3.3 Hazardous Materials and Wastes

The Proposed Action may involve the use of hazardous materials, such as herbicides and fire-retardant and fire-accelerant chemicals, and generation of hazardous waste. Hazardous waste generated on DAF installations is managed, transported, and disposed of in accordance with the Resource Conservation and Recovery Act and federal hazardous waste generator regulations in 40 CFR Parts 260 - 272. Requirements and procedures addressing the site-specific use and application of herbicides may also be included in each installation's INRMP and Pest Management Plan. Prevention measures and response procedures for accidental spills or releases of petroleum products or other hazardous materials are set forth in site-specific Spill Prevention Control and Countermeasures Plans.

Under the Proposed Action installations would continue to follow established DAF, DoD, USEPA, and USDA-Wildlife Service guidelines and procedures for use of hazardous materials and management and disposal of hazardous wastes.

Existing Environmental Restoration Program (ERP) sites would be identified prior to and avoided during implementation of the selected treatments. The DAF would also avoid alteration of or damage to areas identified for planned for hazardous waste treatment and disposal that could render operations infeasible. Because of these practices, no potential adverse effects to existing ERP sites are anticipated. Therefore, hazardous materials and disposal of hazardous wastes associated with the Proposed Action would have no significant impact on the environment, and are not considered further in this PEA.

3.2 BIOLOGICAL RESOURCES

3.2.1 Affected Environment

The affected environment for all fire regime groups can be described as one in which biological resources have been affected by varying levels of past fire suppression. The absence of this natural disturbance has resulted in a departure from historical conditions, affecting both biological communities and ecological processes. Fire suppression allowed succession by fire intolerant species toward a climax condition that reduced diversity and is not consistent with historical communities. In fire-adapted ecosystems (those which have been shaped by the frequent presence of fire) these substantial changes include a buildup of dead biomass which increases the risk of more severe wildfires.

Table 3-3 provides a summary of the differences in biological resources among the fire regime groups, which are further described in the following sections.

> Note: there are generally several FRGs at each installation.

Table 3-3 Summary of Biological Resources by Fire Regime Group

FRG	Vegetation	Fish and Wildlife	Protected Species
I	Vegetation communities in this FRG occur throughout the United States but are most prevalent in eastern and central regions. Examples include: savannahs, grasslands, shrublands, and pine-dominated forests, such as northeast pine barrens, ponderosa pine and mixed conifer forests and woodlands.	Species associated with a wide variety of habitats in the Northeast, North Central, Southeast, South Central, and Southwest regions of the United States. Includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to frequent low or mixed intensity fires.	Examples include: reticulated flatwoods salamander (*Ambystoma bishopi*), eastern indigo snake (*Drymarchon couperi*), and red-cockaded woodpecker.
II	Vegetation communities in this FRG are most prevalent in the Midwest grasslands, but also occur in the Southeast, South Central, Southwest grasslands, shrublands, and riparian areas.	Species associated with a wide variety of habitats in the Northeast, North Central, Northwest, South Central, and Southwest regions of the United States This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to habitats with frequent high intensity fires.	Examples include: lesser prairie chicken (*Tympanuchus pallidicinctus*); gray wolf (*Canis lupus*), and Preble's meadow jumping mouse (*Zapus hudsonius preblei*).
III	Vegetation communities in this FRG group include mountain pinyon and juniper woodlands, desert grassland and steppe, riparian and wetland communities in the Southeast, Northeast, and Northwest, and arid shrublands of the Southwest.	Species associated with a wide variety of habitats in the Northeast, South Central, and Southeast regions of the United States This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to habitats with less frequent low to mixed intensity fires.	Examples include: northern long-eared bat (*Myotis septentrionalis*), red-cockaded woodpecker (*Leuconotopicus borealis*), and alligator snapping turtle (*Macrochelys temminckii*).
IV	Vegetation communities in this FRG include a few forest, riparian, and grassland communities, but the majority are shrublands occurring primarily in the arid western United States.	Species associated with a wide variety of habitats in Alaska and the Northwest, South Central, and Southwest regions of the United States. This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to low frequency mid- to high-severity fires.	Examples include: southwestern willow flycatcher (*Empidonax traillii extimus*), vernal pool fairy shrimp (*Branchinecta lynchi*), and tidewater goby (*Eucyclogobius newberryi*).

Table 3-3 Summary of Biological Resources by Fire Regime Group (continued)

FRG	Vegetation	Fish and Wildlife	Protected Species
V	Vegetation communities in this FRG are generally found in the western United States and Alaska. Examples include: Appalachian (Hemlock), Central Interior and Appalachian Swamp Systems, and Atlantic Coastal Plain Swamp Systems.	Species associated with a wide variety of habitats in Alaska and the Northwest, South Central, and Southwest regions of the United States. This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to very low frequency mixed intensity fires.	Examples include: southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), and desert tortoise (*Gopherus agassizii*).

Notes:
Source: DAF, 2023; LANDFIRE, 2016; and installation INRMPs.
FRG = fire regime group

3.2.1.1 Fire Regime Group I

The affected environment related to biological resources in FRG I includes all DAF-managed lands where fuels reduction and management would occur. These lands encompass a variety of intact ecosystems, including habitat for listed threatened, and at-risk species.

> The **Wildland Fire Branch** generally conducts the majority of its fuels treatments in fire regime group I.

By providing a realistic backdrop for training and testing, healthy and well-managed natural ecosystems play an essential role in maintaining readiness of military troops. Conversely, overuse and poor management can result in degraded ecosystems and declining species, which in turn can result in physical constraints as well as regulatory restrictions on use of these lands. For these reasons, the Sikes Act requires development and implementation of INRMPs for all US installations with significant natural assets. By outlining specific natural resource management goals for an installation and charting a path to achieve those goals, INRMPs serve as foundational documents for balancing trade-offs and ensuring the sustainability and resilience of the installation's ecological resources and support for the military mission.

Since 2012, the USFWS has provided a range of scientific and technical expertise to support wildlife conservation on DAF installations. In 2017, existing partnerships were expanded to include wildland fire management, initiating a long-term plan for USFWS-hosted fire personnel to lead and participate on DAF WSMs. These agreements reduce the risk of wildfires and enhance protection of ecosystems under DAF stewardship, benefiting the USFWS mission to allow protection of land and waters that are essential for conservation of threatened, endangered, and at-risk species. Through prescribed fire or mechanical forest fuel reduction, the USFWS provided mission support to 14 DAF installations across the country in 2019 (USFWS, 2020).

DAF manages 8.3 million acres of land, including 54 installations that are home to 123 federally listed species (DAF, 2020a). For example, Eglin AFB is the largest AFB in the United States with more than 464,000 acres and is home to more than 77 species of state and federally listed wildlife, including gopher tortoises, eastern indigo snakes, and the fourth largest population of red cockaded woodpeckers; 362,000 acres of this land is forested with fire-dependent longleaf pine ecosystem (DAF, 2009). The AFWFB is using prescribed burns to protect habitat for the red cockaded woodpecker. Overgrown vegetation adds fuel to the ecosystem, which intensifies fires and increases the risk of destruction to important natural habitats (DAF, 2020a). Eglin AFB is home to the largest prescribed fire program in the DAF and has established an ambitious goal to prescribe burn 90,000 acres annually to mitigate wildfire and bolster ESA compliance.

Vegetation

The generalized presettlement fire frequency varies greatly and influences vegetation community responses to fire. The vegetation communities found at the installations covered in this PEA vary regionally resulting from a wide range of historical fire frequency and severity. Consequently, the installations have been grouped by dominant BPS land cover and associated FRG occurring at the installations. There is FRG variation within installation boundaries based on topography, soils, hydrologic systems, the presence and distribution of non-native invasive species, and anthropogenic changes. Contextually, vegetation response can be considered fire-dependent, fire-independent, and fire-sensitive. Some plant species found in the regions are fire-dependent and rely on disturbance as part of their life history. Fire-sensitive species have been exposed to wildland fire infrequently but are generally tolerant to infrequent fires. The remaining species are fire-independent and, except under extreme conditions, do not experience fires as a result of environmental conditions that suppress fire occurrence.

Vegetation communities classified as FRG I occur throughout the United States but are most prevalent in eastern and central regions. **Table 3-4** presents examples of the vegetation communities in FRG I at several installations**.** Additional description of the vegetation in this FRG can be found in **Appendix E – Section E.1.1.**

Table 3-4 Fire Regime Group I Vegetation Communities

Vegetation Community	Geographic Location	Example Installations
Grassland	Southeast	Arnold AFB, Sheppard AFB
Grassland	South Central	Altus AFB, Joint Base San Antonio, Dyess AFB, Goodfellow AFB
Shrubland	Southeast	Sheppard AFB
Hardwood	Southeast	Eglin AFB, Poinsett Electronic Combat Range
Hardwood	Northeast	Warren Grove Range, Joint Base McGuire-Dix-Lakehurst
Hardwood	South Central	Joint Base San Antonio
Hardwood	Southwest	Vandenberg AFB, Kirland AFB
Riparian	Southeast	Avon Park Air Force Range, Dare County Range, Eglin AFB, Tyndall AFB, Cape Canaveral Air Force Station
Savannah	Southeast	Eglin AFB, Hurlburt Field, Keesler AFB, Tyndall AFB

Notes:
Source: LANDFIRE, 2016 and installation INRMPs.
AFB = Air Force Base

<u>Fish and Wildlife</u>

Fish and wildlife at DAF installations in FRG I include species associated with a wide variety of habitats in the Northeast, North Central, Southeast, South Central, and Southwest regions of the United States. This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to frequent low or mixed intensity fires. Because of the programmatic nature of this document, as well as the large size of the project area, detailed descriptions of fish and wildlife present are not provided. This information is available in the installation's INRMPs, which are incorporated by reference. For context, representative species of fish and wildlife common in FRG I are listed in **Appendix E – Table E-1**.

<u>Protected Species</u>

Lists of species protected under state or federal regulations are installation-specific and vary over time. Federally and state-protected species have not necessarily been documented on all DAF installations in FRG I. This information is available in the installation's INRMPs. All installations adhere to applicable laws and regulations regarding wildlife and initiate consultation with appropriate agencies when necessary.

3.2.1.2 Fire Regime Group II

<u>Vegetation</u>

Vegetation communities classified as FRG II are most prevalent in the Midwest grasslands, but also occur in the Southeast, South Central, Southwest grasslands, shrublands, and riparian areas. **Table 3-5** examples of the vegetation communities in FRG II at several installations. Additional description of the vegetation in this FRG can be found in **Appendix E – Section E.1.2**.

Table 3-5 Fire Regime Group II Vegetation Communities

Vegetation Community	Geographic Location	Example Installations
Grassland	Southwest	Kirtland AFB, Melrose AFB, Beale AFB
Grassland	North Central	Minot AFB, Malstrom AFB, Grand Forks AFB
Grassland	Southeast	Whiteman AFB
Grassland	South Central	Joint Base San Antonio, Laughlin AFB, Schriever AFB, Vance AFB, Tinker AFB
Shrubland	Southeast	Avon Park Air Force Range, Cape Canaveral AFB
Shrubland	Southwest	Kirland AFB
Hardwood	Southeast	Arnold AFB
Riparian	Southeast	Avon Park Air Force Range, Cape Canaveral Air Force Station, Tyndall AFB, Joint Base Langley-Eustis
Savannah	Southeast	Joint Base Langley-Eustis

Notes:
Source: LANDFIRE, 2016 and installation INRMPs.
AFB = Air Force Base

<u>Fish and Wildlife</u>

Fish and wildlife at DAF installations in FRG II include species associated with a wide variety of habitats in the Northeast, North Central, Northwest, South Central, and Southwest regions of the

United States This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to habitats with frequent high intensity fires. Because of the programmatic nature of this document, detailed descriptions of fish and wildlife present are not provided, as this information is available in the installation's INRMPs, which are incorporated by reference. For context, representative species of fish and wildlife known or having potential to occur in FRG II are listed in **Appendix E – Table E-1**.

Protected Species

Lists of species protected under state or federal regulations are installation-specific and vary over time. This information is available in the installation's INRMPs. Although not all installations in FRG II are known to support federally or state-protected species, all installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. The effects on protected species would be analyzed on a site-specific basis.

3.2.1.3 Fire Regime Group III

Vegetation

Vegetation communities classified as FRG III include a broad array of vegetation that do not frequently experience fire. **Table 3-6** presents examples of the vegetation communities in FRG III at several installations. Additional description of the vegetation in this FRG can be found in **Appendix E – Section E.1.3**.

Table 3-6 Fire Regime Group III Vegetation Communities

Vegetation Community	Geographic Location	Example Installations
Grassland	Southwest	Holloman AFB, Kirtland AFB
Shrubland	South Central	Hill AFB
Hardwood, Conifer, Conifer-Hardwood	Northeast	Dover AFB, Joint Base McGuire-Dix-Lakehurst
Peatland Forest, Peatland non-forest	Alaska	Eielson AFB
Riparian	Southeast	Arnold AFB, Eglin AFB, Barksdale AFB, Robins AFB
Riparian	Southwest	Vandenberg AFB

Notes:
Source: LANDFIRE, 2016 and installation INRMPs.
AFB = Air Force Base

Vegetation communities in FRG III are not typically a high fire risk and less likely to need fuels management. However, FRG III has a wide range of historical fire return intervals, from 35 years to 200 years. Communities at the shorter historical fire return intervals would be expected to be more resilient to burning than those of longer historical fire return intervals. In the Northeast, the communities in FRG III exhibit many similarities to that described for ponderosa pine ecosystems in FRG I (Block et al., 2016), but with a less frequent fire return based on site conditions.

Fire suppression has resulted in changes in species composition and a shift in fire regime. Prescribed fire is being used in drier forests of the Northwest to return low-severity fire conditions to appropriate forest types (Block et al., 2016). Communities at the longer historical fire return intervals would include wetland systems that would not be conducive to burning where mechanical methods would be more appropriate for fuels management.

Fish and Wildlife

Fish and wildlife at DAF installations in FRG III include species associated with a wide variety of habitats in the Northeast, South Central, and Southeast regions of the United States. This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to habitats with less frequent, low to mixed intensity fires. In light of the programmatic nature of this document, detailed descriptions of the fish and wildlife present are not provided as this information is available in the installation's INRMPs, which are incorporated by reference. For context, representative species of fish and wildlife common in FRG III are listed in **Appendix E – Table E-1**.

Protected Species

Lists of species protected under state or federal regulations are installation-specific and vary over time. This information is available in the installation's INRMPs. Although not all installations in FRG III are known to support federally or state-protected species, all installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. An analysis of the effects on protected species would be conducted on a site-specific basis.

3.2.1.4 Fire Regime Group IV

Vegetation

Vegetation communities classified as FRG IV include a few forest, riparian, and grassland communities, but the majority are shrublands occurring primarily in the arid western United States. **Table 3-7** presents examples of the vegetation communities in FRG IV at several installations. Additional description of the vegetation in this FRG can be found in **Appendix E – Section E.1.4**.

Table 3-7 Fire Regime Group IV Vegetation Communities

Vegetation Community	Geographic Location	Example Installations
Grassland	Southwest	NTTR, Kirtland AFB, Hill AFB, Holloman AFB
Shrubland	Southwest	NTTR, Vandenberg AFB, Holloman AFB, Utah Test and Training Range, Beale AFB
Shrubland	Northwest	Mountain Home AFB and associated ranges
Shrubland	North Central	Francis E. Warren AFB
Hardwood, Conifer, Conifer-Hardwood	Alaska	Joint Base Elmendorf-Richardson, Clear Air Force Station
Peatland Forest, Peatland non-forest	Alaska	Eielson AFB, Clear Air Force Station
Riparian	Southwest	NTTR, Melrose Air Force Range
Riparian	Southeast	Dare County Range, Joint Base Langley-Eustis

Notes:
Source: LANDFIRE, 2016 and installation INRMPs.
AFB = Air Force Base; NTTR = Nevada Test and Training Range

Fish and Wildlife

Fish and wildlife at DAF installations in FRG IV include species associated with a wide variety of habitats in Alaska and the Northwest, South Central, and Southwest regions of the United States. This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to low frequency mid- to high-severity fires. Because of the programmatic nature of this document, as well as the large size of the project area, detailed descriptions of the fish and wildlife present are not provided. This information is available in the installation's INRMPs, which are incorporated by reference. For context, representative species of fish and wildlife common in FRG IV are listed in **Appendix E – Table E-1**.

Protected Species

Lists of species protected under state or federal regulations are installation-specific and vary over time. This information is available in the installation's INRMPs. Although not all installations in FRG IV are known to support federally or state-protected species, all installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. The effects on protected species would be analyzed on a site-specific basis.

3.2.1.5 Fire Regime Group V

Vegetation

Vegetation communities classified as FRG V are generally found in the western United States and Alaska. These communities very rarely experience fire. Some of the communities identified as FRG V are also classified as FRG IV, based on location and other factors. **Table 3-8** presents examples of the vegetation communities in FRG V at several installations. Additional description of the vegetation in this FRG can be found in **Appendix E – Section E.1.5**.

Table 3-8 Fire Regime Group V Vegetation Communities

Vegetation Community	Geographic Location	Example Installations
Grassland	Southwest	Kirtland AFB, Holloman AFB
Grassland	Alaska	Joint Base Elmendorf-Richardson
Shrubland	Southwest	NTTR, Barry Goldwater Range, Edwards AFB, Utah Test and Training Range
Hardwood, Conifer, Conifer-Hardwood	Southwest	NTTR
Hardwood, Conifer, Conifer-Hardwood	Alaska	Joint Base Elmendorf-Richardson, Eielson AFB
Peatland Forest, Peatland non-forest	Alaska	Joint Base Elmendorf-Richardson, Clear Air Force Station
Riparian	Southwest	NTTR
Riparian	Southeast	Eglin AFB, Avon Park Air Force Range, Tyndall AFB, Moody AFB
Riparian	Northeast	Joint Base McGuire-Dix-Lakehurst

Notes:
Source: LANDFIRE, 2016 and installation INRMPs.
AFB = Air Force Base; NTTR = Nevada Test and Training Range

Fish and Wildlife

Fish and wildlife at DAF installations in FRG V include species associated with a wide variety of habitats in Alaska and the Northwest, South Central, and Southwest regions of the United States. This FRG includes mammals, birds, invertebrates, fish, and reptiles and amphibians that are adapted to very low frequency mixed intensity fires. Because of the programmatic nature of this document, as well as the large size of the project area, detailed descriptions of fish and wildlife present are not provided, as this information is available in the installation's INRMPs, which are incorporated by reference. For context, representative species of fish and wildlife common in FRG V are listed in **Appendix E – Table E-1**.

Protected Species

Lists of species protected under state or federal regulations are installation-specific and vary over time. This information is available in the installation's INRMPs. Although not all installations in FRG V are known to support federally or state-protected species, all installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. The effects on protected species would be analyzed on a site-specific basis.

3.2.2 Environmental Consequences

The analysis of environmental consequences of the Proposed Action in all fire regime groups takes into consideration that the current condition of biological resources in the project area is, at least in part, a result of varying levels of past fire suppression. As described in Section 3.2.1, the absence of this natural disturbance has resulted in a departure from historical conditions, which has increased the risk of more severe wildfires through the buildup of fuels. Reduction and management of fuels would, therefore, serve both to reduce the risk of damaging wildfires and create vegetation conditions similar to those that occurred historically

3.2.2.1 Proposed Action

Table 3-9 provides a summary of the differences in impacts to biological resources among the fire regime groups. The rationale for these differences is further described in the following sections.

Table 3-9 Summary of Biological Resources Impacts by Fire Regime Group

FRG	Potential Impacts
I	The Proposed Action would improve many vegetation communities, and thus wildlife habitat, by returning a natural ecological process in a measured way to remove accumulated fuels. The severity and timing of fuels treatments would not be expected to be outside natural variability, either spatially or temporally. Because these potential effects are consistent with the historical fire regime, key ecosystem processes and community structure would be retained at the local or landscape level. Fish and wildlife species are those that have adapted to frequent fires and would therefore be expected to recover from any short-term adverse impacts quickly.
II	Potential effects from the Proposed Action would be similar to those identified for FRG I. The severity and timing of fuels treatments would not be expected to be outside natural variability, either spatially or temporally. Because these potential effects would be consistent with the historical fire regime, key ecosystem processes and community

Table 3-9 Summary of Biological Resources Impacts by Fire Regime Group (continued)

FRG	Potential Impacts
II	structure would be retained at the local or landscape level. Fish and wildlife species are those that have adapted to frequent high-severity fires, and would therefore be expected to recover from any short-term adverse impacts more quickly compared with other FRGs (except FRG I).
III	Compared with FRGs I and II, which experience more frequent fire, fish and wildlife species in FRG III may take longer to recover from any potential short-term adverse impacts of the proposed fuels treatments.
IV	Effects of fire on vegetation in FRG IV would be similar to those of FRG III, except that they would potentially be more severe, primarily because most vegetation communities are grasslands or shrublands.
V	The Proposed Action has the highest potential for adverse ecological effects because the severity and timing of fuels treatments would be outside natural variability, either spatially or temporally. However, key ecosystem processes and community structure would be retained at the landscape (regional) level.

Notes:
FRG = fire regime group

Fire Regime Group I

The installation-level natural resources manager would be included in the environmental project planning review process for proposed fuels treatments. Each installation would evaluate proposed fuels treatments on a project-by-project basis, depending on presence or absence of protected species and habitats specific to the installation. Each installation would adhere to all applicable laws and regulations regarding biological resources and would initiate consultation with appropriate agencies when necessary.

Vegetation

Vegetation in FRG I has evolved with similar disturbance frequencies that match the Proposed Action. In many areas, decades of fire suppression have disrupted key ecosystem processes and community structure (Fill et al., 2015; McLauchlan et al., 2020; and Laughlin et al., 2023). The Proposed Action would improve many vegetation communities by returning a natural ecological process in a measured way to remove accumulated fuels. The Proposed Action may result in long-term adverse impacts to natural communities if they would be converted to homogenous vegetation with little diversity. Site-specific assessments would identify sensitive resources in the treatment area before treatments would be implemented to avoid or reduce adverse impacts to protected species, their habitat, and vegetation communities. The Proposed Action would have variable effects on vegetation that may be both beneficial and adverse in vegetation communities classified as FRG I. The severity and timing of effects would not be expected to be outside natural variability, either spatially or temporally, in areas where current conditions are similar to the historical fire regime. Because these effects would be consistent with the historical fire regime, key ecosystem processes and community structure would be retained at the local or landscape level. In areas where conditions are outside the historical fire regime, such as areas altered by fire suppression, invasive species, or other human activities, proposed actions could occur more frequently in an effort to re-establish the historical fire regime. In these areas, key ecosystem processes and/or community structure have already been affected by other factors and shifted to a different fire regime, for example, on arid lands in the west where invasive annual grasses have altered the fire regime and threaten natural communities. In these areas, prescribed burns may be conducted more frequently than the historical fire regime until native vegetation can be re-established. Because the installation natural resource staff would be involved in the project planning, any potential adverse impacts on vegetation would be minimized.

General Effects of Fire and Mechanical Treatments on Vegetation: Fire effects are the physical, biological, and ecological impacts of fire on the environment. Fire effects can be first order or second order (NWCG, 2018):

- First Order Fire Effects are the effects that concern the direct or immediate consequences of fire, such as biomass consumption, crown scorch, bole damage, and smoke production. First order effects form an important basis for predicting secondary effects.
- Second Order Fire Effects are the secondary effects of fire, such as tree regeneration, plant succession, and changes in site productivity. Although second order fire effects are dependent, in part, on first order fire effects, they also involve interaction with many other non-fire variables.

Fire effects are complex and highly variable. Individual species, species assemblages, and ecosystem responses to fire are influenced by many factors, including local climate, weather, seasonality, time since last burn, fire season, fire behavior and characteristics, consumption and coverage, fuels (type, structure, composition, and moisture content), air quality, soils and watershed characteristics, plants, and wildlife (NWCG, 2008). Differences in site characteristics, fuel conditions, and weather before, during, and after a fire will influence fire effects within an ecosystem (NWCG, 2008). Even site-specific effects will vary with seasons or fuel type, loading, or distribution (NWCG, 2008).

Aside from the First Order Fire Effects, direct effects of contact with flame, heat, or smoke, fires affect animals mainly through effects on their habitat, which can be complex and either beneficial or harmful (NWCG, 2008). Additionally, fire effects change depending on the temporal scale and whether individual organisms or populations are discussed. (For example, long-term effects may be beneficial while short-term effects may be harmful as a result of extreme changes during and immediately after the fire.) As a result of these complexities, it is most practical for resource managers to consider fire effects on natural resources at a landscape or population level unless they are considering effects on small populations, such as rare species or habitat, that may be adversely affected.

First Order Fire Effects generally result in adverse effects to vegetation through direct contact with flames that consume plant material, heat overhead vegetation, and top-kill many plants, but Second Order Fire Effects would be beneficial. Depending on the resident time of flames, heat effects could penetrate through protective bark and soil to kill plants. If not killed, plants may quickly re-sprout in response.

Vegetation response to disturbance in general and to fire specifically is highly variable. Plants have experienced many pressures through time to develop adaptation traits. Some traits are adaptations, not to fire per se, but to fire regimes (Keeley et al., 2011), and it is difficult to distinguish specific combinations of pressures to distinguish fire-adaptive traits.

Fire has been a factor throughout history, and vegetation, including grasses, shrubs, and trees, has adapted in ways that provide resilience in response to fire and other disturbances. These adaptations include fire resistance and seeding, sprouting response, invasion, and avoidance (BLM, no date; Brown and Smith, 2000; Keeley et al., 2011). Resistance adaptations include thick bark to shield the stem, thick needle growth around terminal buds, deep roots, modified seedling and sapling development phases, self-pruning lower branches to prevent fire from climbing, and moist, short needles or leaves that are resistant to burning. Prescribed fire would reduce fuels on the ground that act as mulch to prevent many species from establishment. However, mechanical treatment, when implemented without burning, has the potential to produce similar mulch effects through lopped and scattered branches and treetops and masticated shrubs and small trees. If left in place, this mulch could have adverse effects. However, if used in conjunction with prescribed fire, adverse effects would be reduced because debris would be consumed. Block (et al., 2016) highlighted several studies that indicate plant species composition changes and increases in forage production after burning (Lay, 1956; Oosting, 1944) and a decline of herbaceous ground cover associated with fire exclusion (Kucera and Koelling, 1964, Lewis and Harshbarger, 1976).

The Proposed Action would have short-term direct impacts on the treatment areas where the overstock, non-native vegetation would be removed. The Proposed Action would result in long-term beneficial impacts on many vegetative communities by reducing competition, improving light penetration and nutrient availability, and may reduce invasive species. However, fuels treatments may not necessarily result in beneficial impacts on all vegetative communities. Long-term adverse impacts may occur in communities that are less fire tolerant. Unless burned or removed, slash and debris left by mechanical treatments may improve spacing and light penetration but cover the ground and reduce the ability for seeds to germinate.

Accumulated fuels pose serious threats to forest resources and fuel treatments would reduce woody debris, leaves and needles, and understory shrubs and vines that prevents catastrophic wildland fires (Alabama Cooperative Extension, 2018; Brown and Smith, 2000; North Carolina Forest Service, 2019; Wade and Lundsford, 1990). Use of prescribed fire can increase biodiversity in several ecosystems (Brown and Smith, 2000). Properly controlled prescribed fire may control low-quality, undesirable competing vegetation and destructive insects and disease (North Carolina Forest Service, 2019; Wade and Lundsford, 1990). While fire may injure part of a plant or kill the entire plant, many native plants are adapted to natural fire regimes having structural adaptations, specialized tissues, or reproductive features that allow them to thrive in an environment subject to regular fire. Fuels treatments also allow increased sunlight to reach the ground, which promotes growth of native grasses and herbaceous plants and prepares the seedbed for natural regeneration of native trees (North Carolina Forest Service, 2019).

Adverse impacts to vegetation from the use of ground-disturbing equipment may include increased erosion and soil compaction. . These potential short-term adverse effects would be avoided or reduced by following BMPs for stabilization.

Potential Effects of Chemical Treatments: Unintentional damage to plants from herbicide spray drift can occur, and non-selective application can create even-aged stands with less plant diversity.

Adverse impacts to desirable vegetation may potentially occur from increased soil erosion after extensive exotics infestations have been removed. The potential for these short-term adverse impacts would be minimized by adherence to applicable regulations and BMPs described in **Section 2.5**. In the long term, chemical treatments would have beneficial effects on vegetation communities by removing targeted vegetation such as invasive species, and reducing fuels that could result in uncontrolled fire.

Potential Effects of Targeted Grazing: Targeted grazing can be an effective way to reduce fuels. Advantages of targeted grazing over other methods include less impact on steep slopes, reduced soil compaction compared with mechanical methods and effective noxious weed control (Burrows et al., 2015).

The potential effects of targeted grazing on vegetation FRG I would be short-term. The combined effects of the proposed action have the potential to achieve improved results of reducing invasive species and fuels, which result in improved conditions in natural communities. Site-specific grazing plans would be developed to take into consideration location and other factors and prevent overgrazing. The area to be grazed would be fenced to prevent herd access to sensitive areas. Grazing managers would adhere to applicable BMPs to prevent or minimize any short-term adverse impacts to sensitive vegetation through trampling or introduction or spread of invasive species through animal droppings.

Fish and Wildlife

Potential Effects of Prescribed Fire, Mechanical Treatment, and Hand Treatment: Fish and wildlife species in FRG I are those that have adapted to frequent low-intensity fires. Therefore, they would be expected to recover from short-term impacts from prescribed fire, mechanical treatment, and hand treatment more quickly relative to species in other FRGs. Wildlife response to fire would largely depend on the characteristics of the fire, such as season, size, severity, and pattern.

General Effects of Fire (Prescribed and Wildfire) on Wildlife: Numerous studies have shown that prescribed burns and wildfires affect wildlife in various ways, depending on species and season and intensity of the fire. Current scientific consensus is that the benefits of prescribed fire far outweigh the potential adverse effects. Prescribed fire is accepted as an important resource management tool for maintaining or enhancing habitats for many species of wildlife. Population responses by species may be positive, negative, or neutral; short- or long-term (or both); and they often change with time. While prescribed fire creates or maintains habitats for some species, it can also remove or alter conditions in ways that make it unsuitable for other species. A species may benefit from fire in one situation but not another. Fire does not occur uniformly across a landscape, instead manifesting as a heterogeneous mosaic that provides habitats for different species, thereby influencing wildlife diversity (Block, et al., 2016). Generally, wildfire has the potential to cause more adverse effects on wildlife compared to prescribed fire because wildfire can happen at any time of year, and the intensity and duration are uncontrolled, whereas, with prescribed fire these variables would be controlled. See **Appendix E – Section E.3.2** for a summary of potential adverse and beneficial effects on wildlife by duration (short-term vs. long-term), although effects actually occur on a continuum.

Potential Effects of Chemical Treatment: *Herbicides* - A substantial body of research shows that direct toxic effects to wildlife would not be expected when herbicides are used in accordance with legal requirement; however, herbicide use may potentially result in indirect effects from habitat modifications. Wildlife could be exposed to chemicals directly through contact with spray or indirectly through contact with foliage or ingestion of contaminated food items after direct spray. The risk of exposure would generally be low for most terrestrial wildlife species. Potential adverse effects may be direct, such as damage to vital organs, change in body weight, decreased reproductive success, increased susceptibility to predation, and mortality. Adverse indirect effects may also occur, including reduced forage and habitat; decreased population densities within the first year after application as a result of limited reproduction caused by reduced availability of habitat or forage resources; avoidance of treated areas for several years after treatment, and subsequent changes to territorial boundaries and breeding and nesting behaviors; and increased predation of small mammals caused by loss of ground cover. Potential adverse impacts would vary depending on the type of chemical treatment, vegetation being treated, time of application, and duration and mechanism of exposure. The risk of short-term adverse impacts would be reduced through implementation of BMPs.

Potential Effects of Targeted Grazing: Targeted grazing may have beneficial and adverse effects on wildlife. Effects on individual species would vary; however, small mammals and grassland birds would likely be adversely affected by changes in vegetation structure. It is likely that targeted grazing would have adverse effects on voles (*Microtus* spp.), harvest mice (*Reithrodontomys megalotis*), cotton rats (*Sigmodon* spp.), and shrews (*Sorex* spp.) and potentially beneficial or variable effects on deer mice (*Peromyscus* spp.), kangaroo rats (*Dipodomys* spp.), ground squirrels (*Sciuridae* spp.), and lagomorphs (Schieltz and Rubenstein, 2016).

Grazing may increase biodiversity when it is used to maintain grassland structure by suppressing woody encroachment (Filazzola et al., 2020). Vegetation removal would likely have beneficial effects on species adapted to open habitats, such as the burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), and horned lark (*Eremophila alpestris*), while species needing denser cover, such as mallard (*Anas platyrhynchos*), short-eared owl (*Asio flammeus*), and Baird's sparrow (*Ammodramus bairdii*) would likely be adversely affected (USDA NRCS, 2006). Ungulates such as deer and elk (*Cervus canadensis*) may also be adversely affected by changes in forage quantity and quality (Schieltz and Rubenstein, 2016). Responses of reptiles are variable, with populations of some species potentially decreasing in response to grazing while others increase. Potential adverse effects on amphibians and fish would be avoided through use of BMPs to protect wetlands and riparian areas.

Livestock grazing would likely support grassland bird conservation because it supports persistence of native plants and heterogeneity in vegetation structure (Gennet et al., 2017). Some prairie species, such as mountain plovers (*Charadrius montanus*) and burrowing owls, require habitats characterized by short, sparse vegetation (USDA NRCS, 2006). Species adapted to tall-dense grassland vegetation would be likely to show negative response to grazing. Waterfowl are generally tolerant of light to moderate grazing (Kruse and Bowen, 1996; USDA NRCS, 2006).

Areas where targeted grazing would occur under the Proposed Action would be relatively small and would be protected through use of BMPs. Therefore, it would be anticipated that targeted grazing would have no population-level effects on fish and wildlife.

Protected Species

Given the extent of DAF-managed lands throughout the continental United States and Alaska, the known or potential presence of federal and state-listed species on DAF-managed lands, and potential effects on those species from the Proposed Action, cannot be determined at the programmatic level of analysis.

> Installations would **evaluate potential environmental impacts** to all resources from implementation of specific fuels treatments. The presence of ESA-listed species would likely trigger the need for additional analysis and mitigation.

Installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. An analysis of effects on all protected species, including insects and plants, would be conducted on a site-specific basis before implementing proposed fuels treatments included in the Proposed Action.

Fire Regime Group II

General effects of the Proposed Action on Biological Resources are described under the Fire Regime Group I heading. To reduce repetition, this section describes how effects may differ at installations in FRG II and includes region-specific examples.

Vegetation

Vegetation in FRG II have evolved with similar disturbances as those in FRG I. Effects from the Proposed Action would be similar to those identified for FRG I. In many areas, decades of fire suppression have disrupted key ecosystem processes and community structure (Fill et al., 2015; McLauchlan et al., 2020; and Laughlin et al., 2023). The Proposed Action would return a natural ecological process in a measured way so that accumulated fuels can be removed, which may be beneficial to vegetation communities. Consequently, the Proposed Action has the potential to have both beneficial and adverse effects in vegetation communities classified as FRG II. The severity and timing of effects would not be expected to be outside natural variability, either spatially or temporally. Because these effects would be consistent with the historical fire regime, key ecosystem processes and community structure would be retained at the local or landscape level.

Fish and Wildlife

Fish and wildlife species in FRG II are those that have adapted to frequent high-severity fires replacing greater than 75 percent of the dominant overstory vegetation. They would therefore be expected to recover from any potential short-term adverse impacts of the proposed fuels treatments more quickly compared with other FRGs (except FRG I).

As described further in **Appendix E – Section E.3.2**, numerous studies have shown that wildlife species known to occur in FRG II may experience both adverse and beneficial effects of prescribed burns. Because fire is an integral part of the ecosystem, fire suppression has adversely affected species that require periodic fire to maintain their habitat.

Protected Species

Although not all the installations in FRG II are known to support federally or state-protected species, installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. An analysis of the effects on protected species would be conducted on a site-specific basis.

Fire Regime Group III

General effects of the Proposed Action on Biological Resources are described under the Fire Regime Group I heading. To reduce repetition, this section describes how potential effects may differ at installations in FRG III and includes region-specific examples.

Vegetation

In the Northwest, fire suppression has resulted in changes in species composition and a shift in fire regime. Prescribed fire is being used in drier forests of the Northwest to return low-severity fire conditions to appropriate forest types (Block et al., 2016). Conducting prescribed fire during drier conditions and seasons that can replicate the mixed severity fire-effects in the Northeast is challenging. Consequently, low-severity prescribed fires provide only reductions in understory fuels and some thinning and mortality of smaller trees, which may reverse effects of fire suppression. These results may reduce the risk of more severe fires but do not produce the heterogeneity of conditions produced by true mixed-severity fires. Therefore, fuels reductions in these communities do not necessarily replicate natural conditions and may even prevent typical historical fire conditions. The southeast ecosystem may have similar results if prescribed fire is excluded from wetlands. While these systems do not regularly experience fire, the proximity to fire-prone upland communities presents a regular risk of fire intrusion when conditions are conducive. Conducting prescribed burns under ideal conditions may not replicate natural conditions and may prevent mixed-severity effects. The Proposed Action has the potential for adverse effects on vegetation because the severity and timing of proposed fuels treatments may be outside natural variability, either spatially or temporally; however, key ecosystem processes and community structure would be expected to be retained at the landscape (regional) level. The Proposed Action would likely also have both short- and long-term beneficial effects by introducing disturbance that has been excluded over the past decades.

Fish and Wildlife

Fish and wildlife species in FRG III are those that have adapted to less frequent low to moderate-intensity fires. Compared with FRGs I and II, which experience more frequent fire, fish and wildlife species in FRG III may take longer to recover from any potential short-term adverse impacts of the proposed fuels treatments. Effects of mixed-severity fire regimes on wildlife have not been extensively studied (Block et al., 2016); however, it is known that vegetation heterogeneity produced by mixed-severity fire regimes is favored by some wildlife species. Lehmkuhl (2004) found that mixed-conifer forests support wildlife species associated with both low and high-severity fire forest types, and that downed woody debris and snags in mixed-severity fire conditions are beneficial to many wildlife species. One example is Canada lynx (*Lynx canadensis*) that uses stands of dense large trees with blowdowns and other sources of large woody debris as denning sites, with surrounding forests of heterogeneous conditions supporting snowshoe hares and other prey species. Northern flying squirrels (*Glaucomys sabrinus*) also may use varying stand conditions produced in mixed-severity fire regime forests (Lehmkuhl, 2004). Northern goshawks (*Accipiter gentilis*) prefer nesting in stands of dense large trees with fairly open understories, but with a variety of other forest conditions of varying density where they can forage on various prey species (Reynolds et al., 2008).

Protected Species

Although not all installations in FRG III are known to support federally or state-protected species, installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. The effects on protected species would be analyzed on a site-specific basis.

Fire Regime Group IV

General effects of the Proposed Action on Biological Resources are described under the Fire Regime Group I heading. To reduce repetition, this section describes how effects may differ at installations in FRG IV and includes region-specific examples.

Vegetation

Vegetation in FRG IV has not historically experienced fire frequently. When fire occurs, effects would be of high severity. Effects of fire on vegetation in FRG IV would be similar to those of FRG III except that they would be more severe, primarily because most vegetation communities are grasslands or shrublands. Communities at the shorter historical fire return intervals would be expected to be more resilient to burning than the ones with a longer fire return interval. Communities at the longer historical fire return intervals would include grassland and shrubland systems that would not be conducive to burning because of the arid conditions, higher elevations, and sparce ground cover that would carry fire.

The arid shrublands of the west may benefit most from the Proposed Action where invasive annual grasses have altered the fire regime and threaten natural communities. Bradley et al. (2017) found that even a low percent of cheatgrass cover increases fire risk in the Intermountain Western United States. Using cattle to create breaks in fuels resulting from extensive exotic annual grass cover can reduce fire severity and negative impacts to native communities in Great Basin rangelands (Bradley et al., 2017; Diamond et al., 2009). Results from another study suggest that moderate livestock grazing decreases the risk of wildfires in sagebrush steppe plant communities by decreasing severity, continuity, and size of burn compared with long-term nongrazed sagebrush rangelands (Davies et al., 2010). These effects may be similar in other semi-arid and arid rangelands with infestation of exotic annual grasses.

Effects of the Proposed Action on vegetation would be similar to those identified for FRG III. Use of a combination of fuels treatments would allow managers to reduce fuels in a controlled away and avoid potential adverse effects. In many areas, invasive species have changed the structure of the vegetation community, resulting in an increased fire risk and a shift in fire regime resembling that of FRG II. Consequently, without fuels management wildfires have the potential to cause more adverse impacts on the ecosystem. The Proposed Action would improve vegetation communities by returning a natural ecological process in a measured way so that accumulated fuels can be removed. The Proposed Action, using combinations of the proposed methods, would reduce invasive species, which reduces the potential for wildfires that can adversely affect the native plant community. Consequently, the Proposed Action would have variable effects that would be both beneficial and adverse in vegetation communities classified as FRG IV. The severity and timing of effects would not be expected to be outside natural variability, either spatially or temporally. Key ecosystem processes and community structure would be retained at the local or landscape level.

Fish and Wildlife

Fish and wildlife species in FRG IV are those that have adapted to less frequent low to moderate-intensity fires. Compared with FRGs I and II, which experience more frequent fire, fish and wildlife species in FRG IV may take longer to recover from any potential short-term adverse impacts of proposed fuels treatments.

Numerous wildlife species associated with sagebrush (*Artemisia* spp.) have been impacted by changes in sagebrush ecosystems resulting from altered fire regimes. Sagebrush-associated species including greater sage-grouse (*Centrocercus urophasianus*), pronghorns, pygmy rabbits (*Brachylagus idahoensis*), and lesser prairie-chickens have been impacted negatively by juniper invasion of areas historically dominated by sagebrush (Elmore et al., 2018; Rowland et al., 2011).

Over much of their range, lesser prairie chickens persisted within sand sagebrush communities with a frequent-fire regime. Fire acted to keep sand sagebrush (*Artemisia filifolia*) at appropriate densities and stimulated growth of grasses and forbs. Lesser prairie-chickens have used recent burns as leks and for brood-rearing (Elmore et al., 2018), but require sites more than 3 years post-burn for optimum nesting habitat. A mosaic of recent to older burns within a home range provides optimal juxtaposition of habitat needed for leks, nesting, and brood-rearing. Fire has influenced greater sage-grouse habitat historically by maintaining some big sagebrush communities (especially mountain big sagebrush [*Artemisia tridentata vaseyana]*) and reducing the presence of other big sagebrush communities (especially Wyoming big sagebrush [*Artemisia tridentata wyomingensis*]) (Block et al., 2016). However, prescribed fire has not been shown to improve sage-grouse habitat, at least not within the 10- to 20-year timeframe of most studies (Block et al., 2016). Beck et al. (2009) observed that sagebrush cover following prescribed burns in Wyoming big sagebrush had not returned to levels high enough to provide good sage-grouse habitat for 14 years after the burn, even though other desirable habitat features had responded to the fire. Rhodes et al. (2010) investigated sage-grouse habitat features 6 years following a burn in Wyoming big sagebrush and reported a 50 percent decrease in tall grasses and shrubs needed by sage-grouse, a decrease in ant populations (a food source), and no increase in forbs considered desirable to sage-grouse. Hess and Beck (2012) similarly reported that Wyoming big sagebrush did not return to desired conditions for sage-grouse even after 19 years in their study area, and Davis and Crawford (2014) reported that mountain big sagebrush did not meet conditions for sage-grouse 10 to 11 years post burn. Pedersen et al. (2003) modelled effects of fire and concluded that small fires may benefit sage-grouse, but large fires (more than 10 percent of the spring-use area) occurring at high frequencies (17 years between fires) could result in their extirpation.

Holmes (et al., 2017) investigated bird abundance in response to western juniper (*Juniperus occidentalis*) removal and found that densities of Brewer's sparrow (*Spizella breweri*), green-tailed towhee (*Pipilo chlorurus*), and vesper sparrow (*Poocetes gramineus*) were greater at treated versus untreated portions of the study area. Density of gray flycatcher (*Empidonax wrighti*) was lower in cut areas, demonstrating that conifer removal projects designed to retain shrub cover and structure can increase densities of multiple species of ground and shrub nesting birds, while reducing others.

Fire is important to pronghorn because it creates the desired density of grasses and forbs and improves quality of forbs for foraging (O'Gara and Yoakum, 2004). Fire can also maintain shrub cover at desirable densities and heights for pronghorn. Elk increased use of a sagebrush burn for 2 years post-burn, but then returned to similar levels of use as unburned areas (Van Dyke and Darragh, 2007).

Pygmy rabbits are a sagebrush-obligate species. Changes to historical fire regimes allow expansion of pygmy rabbits into new areas where livestock grazing and fire suppression have resulted in expansion of sagebrush communities and cause a loss of habitat in other areas where juniper invade because of the lack of fire (Larrucea and Brussard, 2008). Fewer species of small mammals have been observed following a sagebrush burn, but species diversity returned to those of unburned control plots 3 years after fire (McGee, 1982).

Protected Species

Although not all the installations in FRG IV are known to support federally or state-protected species, installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with the appropriate agencies when necessary. The effects on protected species would be analyzed on a site-specific basis.

Fire Regime Group V

General effects of the Proposed Action on Biological Resources are described under the Fire Regime Group I heading. To reduce repetition, this section describes how effects may differ at installations in FRG V and includes region-specific examples.

Vegetation

Historically, vegetation in FRG V has not experienced fire frequently, if ever, and when fire occurs effects would be of high severity. These communities do not often experience fires because of arid environments with little fuels that can carry fire, extreme wet conditions, or mesic conditions in northern climates. Consequently, these communities are not typically a high fire risk and are less likely to need fuels management. However, communities in the arid lands of deserts and intermountain communities in the west may benefit most from the Proposed Action where invasive annual grasses have altered the fire regime and threaten natural communities.

Communities at the longer historical fire return intervals would include wetland systems that would not be conducive to burning, except during extreme drought. Mechanical and hand treatments would be more appropriate for fuels management, if necessary, in these systems. Entry into these communities would potentially introduce invasive species. BMPs would minimize impacts. Changes in conditions in arid environments resulting from the presence and distribution of invasive species may affect fuels distribution and fire regime. Invasive species fill in open ground to provide a continuous fuel with higher fire severity when burned than that of native species. The resulting fire kills native species, while the invasive plant persists through prolific seeding and permanently alters the community. The Proposed Action, using the combination of methods, would reduce invasive species, which serves to reduce the potential for wildfires that can adversely affect the native plant and animal community.

Fuels management in these systems would be performed proportionally to the fire risk. Many are mesic or wetland communities that would be expected to have a high fuel load but low probability of fire based on fuel moisture, climate, and other factors. The proposed fuels treatments in these wetland communities would be evaluated at a site-specific level to access potential impacts.

Because the severity and timing of fuels treatments in FRG V would be outside natural variability, either spatially or temporally, the Proposed Action has the potential for adverse ecological effects. However, any adverse effects would be avoided or reduced through implementation of the AFWFB's extensive planning process (described in Chapter 2), including consideration of appropriate methods, site-specific coordination with installation Natural Resources staff review, and effects assessment. Because of this level of planning, it is expected that key ecosystem processes and community structure would be retained at the landscape (regional) level. The Proposed Action would likely have beneficial effects, particularly with respect to reducing invasive annual grasses in the west. Overall, the potential effects on vegetation communities classified as FRG V would be adverse in the short-term and beneficial in the long term.

Fish and Wildlife

Fish and wildlife species in FRG V are those that have adapted to low frequency, any-intensity fires. Compared with other FRGs that experience more frequent fire, fish and wildlife species in FRG V may take longer to recover from any potential short-term adverse impacts of proposed fuels treatments.

Protected Species

Although not all installations in FRG V are known to support federally or state-protected species, installations would follow all applicable laws and regulations regarding wildlife and would initiate consultation with appropriate agencies when necessary. The effects on protected species would be analyzed on a site-specific basis.

3.2.2.2 No Action Alternative

Fire Regime Group I

The potential adverse effects of not conducting fuels management on biological resources in FRG I would be more severe than in any of the other FRGs because the vegetation and fish and wildlife in this group evolved in the presence of frequent low-intensity fires and require it to maintain ecosystem balance. Therefore, it is assumed that perpetuating or recreating a natural fire regime would benefit biological resources. When fire frequency increases or decreases substantially or fire severity changes from pre-settlement patterns, habitat for many animal species declines (Lyon et al., 2000). Under the No Action Alternative, the many beneficial effects of fuels management on biological resources would not be realized and fuels would build up, degrading habitat and increasing the risk of uncontrolled higher intensity fires that would damage habitat, including habitat for protected species. Under the No Action Alternative, an uncontrolled wildfire would be more likely to occur, which may have substantial adverse effects on biological resources. While prescribed burns would be carefully planned and conducted during the optimum season for ecological restoration, uncontrolled wildfires could occur any time of year and are more likely during hot, dry, windy conditions when fire behavior is most extreme and thus have a greater potential for long-term adverse effects. In the event of a major wildfire, the potential for noxious weeds to become established over larger areas would increase because of the disturbance to established vegetation communities. Spread of noxious weeds and creation of hydrophobic soils resulting from a major wildfire may prevent re-establishment of native plant communities, resulting in potentially long-term adverse impacts on vegetation. Aquatic habitats would also be adversely affected, as adjacent streams would be subject to heavy flow volumes and resulting erosion from increased runoff. Habitat for protected species, already small or isolated, would be at high risk from an uncontrolled wildfire.

Fire Regime Group II

In addition to the potential adverse effects described under the Fire Regime Group I heading, the adverse effects of not conducting fuels management on biological resources in FRG II would be more severe compared with the FRGs with less frequent fires because vegetation and fish and wildlife in this group require frequent fires to maintain key ecosystem functions. Exclusion of fire and other disturbances would allow ecological succession and encroachment of shrubs and trees that would alter and degrade natural communities.

Fire Regime Group III

The potential adverse effects of not conducting fuels management on biological resources in FRG III would be less severe than in FRGs I and II that require more frequent fires because the vegetation and fish and wildlife in this group are adapted to less frequent fires. However, without fuels management, and if natural disturbances are suppressed, fuels would continue to build up, degrading habitat and increasing the risk of uncontrolled higher intensity fires with the potential to damage habitat. Because vegetation in FRG III does not experience frequent fire, fuels may build up to a greater extent.

Lowland fire-adapted peatland ecosystems in the Southeastern United States fall into FRG III. These communities have also adapted to fire as a regular ecological process even though the range of fire intensities and frequencies is often much wider than those found in upland longleaf pine savannas. These communities are often part of wetland complexes and have developed deep organic soil types that support marshes, canebrakes, pond pine (*Pinus serotina*) pocosins (evergreen shrub bogs with pond pine), Atlantic white cedar (*Chamaecyparis thyoides*) forests, and nonriverine swamps (Fussell et al., 1995). The effects of fire suppression in these lowland fire-adapted ecosystems are similar to those in other areas of the southeast: conversion to less fire-adapted ecosystems; a loss of threatened, endangered, and other rare endemic species; and increased fire risk due to increasing fuel loads (Robertson et al., 1998). The No Action Alternative would potentially perpetuate this trend.

Fire Regime Group IV

The potential adverse effects of not conducting fuels management on biological resources in FRG IV would be less severe than FRGs I and II that require more frequent fire because the vegetation and fish and wildlife in this group are adapted to less frequent fire. However, without fuels management, and if natural disturbances are suppressed, fuels would increase in both local density and regional distribution, particularly when represented by invasive plant species, degrading habitat and increasing the risk of uncontrolled, higher intensity fires that would alter vegetation communities and reduce natural wildlife habitat.

Fire Regime Group V

The potential adverse effects of not conducting fuels management on biological resources in FRG V would be less impactful compared with other FRGs because vegetation and fish and wildlife in this group are adapted to long periods without fire. However, without fuels management, and if natural disturbances are suppressed, fuels would build up, degrading habitat and increasing the risk of uncontrolled higher intensity fires with the potential to damage habitat.

3.3 Water Resources

3.3.1 Affected Environment

The affected environment for water resources includes all DAF-managed lands where proposed fuels treatments would occur, as well as off-site waterways adjacent to those lands that could potentially be impacted by runoff. The DAF manages millions of acres of lands used primarily for national defense purposes. These lands encompass a variety of water resources, depending on the land's climate, physical characteristics, and level of human disturbance.

Approximately 1.14 million acres of water resources are present on DAF installations. These water resources include estuarine/marine deepwater and marine wetland habitats, freshwater emergent and forested/shrub wetlands, freshwater ponds, lakes, and riverine habitats. Approximately 2.1 million acres are categorized as either playas or wetlands that fill only during rare periods of high precipitation events, such as those at the Utah Test and Training Range (UTTR).

The presence of water resources on DAF-managed lands depends on localized weather patterns and, subsequently, precipitation events via rainfall, snowfall, availability of upstream water, or snowmelt. DAF-managed lands in drier climates, or in wetter regions during a drought, may support temporary water sources or may be primarily dry, whereas DAF-managed lands in wetter climates or in areas experiencing flooding may support perennial streams, large wetlands, or other large, permanent sources of surface water. Annual precipitation averages can range from 7 or 8 inches in the Mojave Basin and Range and Sonoran Basin in the southwestern United States to 48 or 53 inches in the Atlantic Coastal and Southern Coastal Plains (USEPA, 2013; Wilken et al., 2013). From 1963 to 1993, annual precipitation averages in the Northeast region range from 31 to 47 inches and in the North and South Central regions from 2 to 31 inches (Clinton et al., 2012).

3.3.1.1 Fire Regime Group I

Installations with FRG I as their predominant FRG are in the Southeast (18 installations), Northeast (10 installations), South Central (8 installations), Southwest (1 installation), and North Central (1 installation) regions. Approximately 211,000 acres of water resources are present on DAF-managed lands in FRG I. The area of each type of water resource on DAF-managed lands is shown in **Table 3-10**. In FRG I, there are approximately 42 acres of water resources (playa lake) on JBSA, that fill only during infrequent periods of precipitation events.

Table 3-10 Water Resources and Acreage in Fire Regime Group I

Water Resource	Area (acres)
Estuarine and Marine Deepwater	1,512
Estuarine and Marine Wetland	6,187
Freshwater Emergent Wetland	35,993
Freshwater Forested/Shrub Wetland	156,905
Freshwater Pond	1,836
Lake	5,385
Riverine	2,794
Other	42
Total	**210,654**

Source: USFWS, 2018

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. § 1451, et seq., as amended) provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307 of the CZMA stipulates that federal projects that affect land uses, water uses, or other coastal resources of a state's coastal zone must be fully consistent or consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management program. Federally owned lands, including DAF installations, are statutorily exempt from state-designated coastal zones; however, actions occurring on federally owned lands having potential to affect coastal zone resources must be consistent to the maximum extent practicable with the enforceable policies of the applicable state's coastal zone management program. The CZMA federal consistency provision no longer applies in Alaska.

3.3.1.2 Fire Regime Group II

The affected environment for water resources in FRG II is the same as that of FRG I, with the following exceptions.

Installations having FRG II as their predominant FRG are located in the South Central (11 installations), North Central (3 installations), Northeast (1 installation), Northwest (1 installation), Southeast (1 installation), and Southwest (1 installation) regions. In FRG II, there are approximately 2,000 acres of water resources. **Table 3-11** lists acreages of water resources in FRG II by type.

Table 3-11 Water Resources and Acreage in Fire Regime Group II

Water Resource	Area (acres)
Estuarine and Marine Deepwater	0
Estuarine and Marine Wetland	0
Freshwater Emergent Wetland	568
Freshwater Forested/Shrub Wetland	466
Freshwater Pond	230
Lake	506
Riverine	212
Total	1,982

Source: USFWS, 2018

3.3.1.3 Fire Regime Group III

The affected environment for water resources in FRG III is the same as that of FRG I, with the following exceptions.

The affected environment for water resources within FRG III occurs at installations in the Southeast (2 installations) and Northeast (1 installation) regions. In FRG III, there are approximately 2,700 acres of water resources. **Table 3-12** depicts acreages of water resources in FRG III by type.

Table 3-12 Water Resources and Acreage in Fire Regime Group III

Water Resource	Acreage
Estuarine and Marine Deepwater	3
Estuarine and Marine Wetland	6
Freshwater Emergent Wetland	107
Freshwater Forested/Shrub Wetland	1,465
Freshwater Pond	54
Lake	624
Riverine	466
Total	2,726

Source: USFWS, 2018

3.3.1.4 Fire Regime Group IV

The affected environment for water resources in FRG IV is the same as that described for FRG I, with the following exceptions.

The affected environment for water resources within FRG IV occurs at installations in the Southwest (6 installations) and Northwest (2 installations) regions, and Alaska (2 installations). In FRG IV, there are approximately 17,000 acres of water resources. **Table 3-13** lists acreages of water resources in FRG IV by type. In FRG IV, there are 525 acres of water resources, playa lakes, that fill only during rare periods of precipitation. These water resources are located on Holloman and Vandenberg AFBs.

Table 3-13 Water Resources and Acreage in Fire Regime Group IV

Water Resource	Acreage
Estuarine and Marine Deepwater	76
Estuarine and Marine Wetland	661
Freshwater Emergent Wetland	1,931
Freshwater Forested/Shrub Wetland	12,308
Freshwater Pond	623
Lake	322
Riverine	1,132
Other	525
Total	**17,578**

Source: USFWS, 2018

3.3.1.5 Fire Regime Group V

The affected environment for water resources in FRG V is the same as that described for FRG I, with the following exceptions.

The affected environment for water resources within FRG V occurs at installations in the Southwest (6 installations), Northwest (1 installation), Northeast (1 installation), and South Central (1 installation) regions, and Alaska (1 installation). In FRG V, there are approximately 179,000 acres of water resources. **Table 3-14** depicts acreages of water resources in FRG V by type. In FRG V, there are 90,142 acres of water resources that fill only during rare periods of precipitation events, composed of 90,094 acres of playa lakes and 48 acres of riverine habitats. These water resources are located on Barry Goldwater Range, Edwards AFB, Kirtland AFB, and the Nevada Test and Training Range (NTTR).

Table 3-14 Water Resources and Acreage in Fire Regime Group V

Water Resource	Acreage
Estuarine and Marine Deepwater	3
Estuarine and Marine Wetland	2,425
Freshwater Emergent Wetland	1,837
Freshwater Forested/Shrub Wetland	19,100
Freshwater Pond	6,333
Lake	794
Riverine	58,709
Other	90,142
Total	**179,344**

Source: USFWS, 2018

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Fire Regime Group I

Evaluation criteria for potential impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. Adverse impacts on water resources would occur if the Proposed Action:

1. Reduces water availability or supply to existing users,
2. Overdrafts groundwater basins,
3. Exceeds safe annual yield of water supply sources,
4. Adversely affects water quality,
5. Endangers public health by creating or worsening health hazard conditions, or
6. Violates established laws or regulations adopted to protect water resources.

Evaluation criteria for potential impacts on floodplains are based on water availability, quality, and use; existence of floodplains; and associated regulations. Adverse impacts on floodplains would occur if the Proposed Action:

1. Endangers public health by creating or worsening flood conditions,
2. Violates established laws or regulations adopted to protect floodplains, or
3. Is proposed in areas with high probabilities of flooding.

Coastal Zone Management impacts would be considered significant if proposed fuels treatments would be inconsistent with a state's coastal zone management program. A coastal zone consistency determination would be prepared for proposed fuels treatments as applicable.

Potential impacts to water resources from the Proposed Action would be carefully evaluated and considered on a site-specific basis before proposed fuels treatments would be implemented on

DAF-managed lands. Evaluating water resources specific to an installation and understanding applicable federal and state laws and regulations will guide decisions on the type of management actions that should be taken and what regulations need to be followed. The installation-level natural resources manager would be included in the environmental project planning review process for all proposed fuels treatments. Each installation would evaluate effects on water resources from implementation of proposed fuels treatments on a project-by-project basis.

If Waters of the United States (WOTUS) could be affected by the Proposed Action, installations would coordinate with USACE to obtain any required permits before initiating work in accordance with the CWA.

Installations would utilize the National Flood Hazard Layer (FEMA, 2021) to identify lands located within the 100-year and 500-year floodplains. If floodplains are avoided during implementation of the Proposed Action, there would be no effect on floodplains. If it is determined the action would affect floodplains, the DAF would ensure the action complies with Executive Order (EO) 11988. Such action would be selected only if no practicable alternative to the action exists that does not adversely affect floodplains. In accordance with EO 11988, the DAF would notify the public if a proposed fuels treatment would occur in or have the potential to affect floodplains.

Proposed fuels treatments having the potential to affect state coastal zone resources would be implemented in a manner that would be consistent to the maximum extent practicable with the applicable state's coastal zone management policies. The DAF would prepare federal coastal zone consistency determinations as needed on a site-specific basis and submit these determinations to the applicable state coastal zone management program for review and concurrence. Proposed fuels treatments having the potential to affect coastal zone resources would not be implemented until state concurrence with such a determination is received.

Effects of Prescribed Burns

Short-term adverse impacts on water resources may occur from prescribed burns and would largely depend on the intensity and severity of burns (NMED, n.d.). All fires would involve short-term adverse impacts caused by loss of vegetation and stabilizing structures including short-term ash runoff, increased soil erosion, runoff, and sedimentation.

Long-term impacts on water resources from prescribed burns would be beneficial. Effects of low-severity fires on water resources, such as small-scale prescribed burns, would generally be minimal and short lived. Prescribed fires with low to moderate burn severity rarely result in adverse hydrologic effects (Neary et al., 2005). Low severity, prescribed burns would ultimately decrease the size, frequency, and severity of wildfires, reducing adverse impacts on surface water and stormwater by decreasing post-wildfire soil erosion, runoff, and sedimentation. Hydrological benefits also may occur in areas that have undergone fire suppression, resulting in dense forests where thinning can result in restoration of seeps and springs (Stout et al., 2012). Prescribed fire would reduce nonnative and invasive wetland plant species and potentially increase native wetland plant species.

Potential long-term, adverse impacts on water resources may occur from severe wildfires and high intensity prescribed burns, which often consume the soil organic layer that allows water to infiltrate slowly into soil, resulting in high erosion rates and increased sediment levels in streams and sediment deposition in watersheds (Ice et al., 2004). Extreme runoff rates can occur after large or severe wildfires from charred land that is unable to absorb precipitation. These runoff rates can cause severe floods when high-precipitation storms occur over recently burned land and subsequently result in reduced groundwater level recharge, as runoff rates may exceed infiltration rates. Furthermore, high runoff rates can flush vast quantities of ash, sediment, nutrients, and contaminants into streams, river, and downstream reservoirs (USEPA, 2019). Within waterways, adverse water quality changes can occur, possibly impacting fish and other aquatic organisms (NMED, n.d.). Implementation of more frequent, lower-intensity fires may reduce effects of erosion and loss of soil structure associated with high-severity fires and reduce the likelihood of a severe wildlife occurring. As such, forested and riverine environments would be more vulnerable to adverse effects from prescribed burning.

The BMPs described in **Section 2.5** include measures such as establishing buffer strips around riparian and wetland habitats to reduce sediment loss and deposition into adjacent waterways. Soil erosion would be minimized using soil stabilization treatments as necessary. Because activities within or near surface waters would conform to federal, state, and local regulations, as well as BMPs, any adverse impacts on water resources would be less than significant.

Potential Effects of Mechanical/Hand Treatment

Potential short-term adverse impacts on water resources would occur from runoff as a result of soil compaction and erosion. Removal of vegetation as a soil stabilization structure and compaction resulting from use of heavy machinery would potentially result in excess runoff. Potential adverse effects may include sediment runoff into adjacent water resources and potential release of pollutants such as fuels and lubricants when heavy equipment drives through water crossings or across the landscape. Potential short-term adverse effects would be prevented or minimized through adherence to applicable BMPs.

Long-term, beneficial impacts on water resources would occur from reduction of fuels available for consumption by severe wildfires. Removal of fuels would limit the potential for wildfire, therefore reducing potential adverse impacts that may cause runoff or excess nutrient loads into adjacent waterways. Furthermore, removal of non-native vegetation would reduce potential adverse effects on water availability for native vegetation adapted to the existing environment.

Potential Effects of Chemical Treatments

A list of herbicides approved for use on DAF-managed lands is provided in **Appendix F**. Herbicides would be applied according to label instructions by a certified applicator.

Potential short-term to long-term adverse impacts on water resources may occur from chemical fuel treatments from spray-drift during application, persistence of chemicals in the soil and subsequent leaching into groundwater resources, and inadvertent release of chemicals into wetlands. Foliar or soil application of herbicides can increase herbicides via groundwater discharge, atmospheric drift, and runoff (USEPA, 2023b). Herbicide presence in streams can be bound to sediments or dissolved in the water column and can adversely affect plants and aquatic organisms (USEPA, 2023b). Wetland and riparian communities can be highly susceptible and sensitive to chemical pollutants. Use or contamination within these systems may result in degradation of habitat by reducing forage quality and abundance for wildlife species. All chemical treatments (herbicides) would be applied in accordance with label instructions, registered with the

USEPA, observe stipulations as established by AFMAN 32-1053, *Integrated Pest Management Program*, and be approved for use on both the installation and DoD pesticide authorized use list.

Effects of fire retardants on water depend on the location of use adjacent to waterways and the volume applied. Use of fire retardants for wildfire suppression has the potential to adversely impact surface water and groundwater in the short term. Fire retardants typically contain high amounts of nitrogen or phosphorus (Hopmans and Bickford, 2003), potentially causing lethal effects to fish and aquatic organisms when used in close proximity to streams or as runoff and subsequently deposited into waterways (NMED, n.d.; UWYO, 2013). Application near streams can result in reduced water quality, yielding toxic levels of chemicals to aquatic organisms (Neary et al., 2005). Fire retardants would likely be used only in emergencies where a fire would threaten to grow out of control or pose a threat to human life. In some instances, use of retardants may benefit a watershed by protection from catastrophic fire that could require years to recover. Therefore, there would be no potential significant adverse effects from fire retardants on water resources.

Because activities within or near surface waters would conform to federal, state, and local regulations, as well as BMPs described in **Section 2.5**, any adverse impacts on water resources would be less than significant. For projects that impact WOTUS, the installation would develop mitigation measures consistent with USACE policies and permitting requirements in accordance with Section 404/401 of the CWA. These measures may include compensatory mitigation, including restoration or enhancement of surface waters and riparian areas impacted by project activities (40 CFR Part 230).

Potential Effects of Targeted Grazing

Targeted grazing would reduce vegetation, potentially increase runoff and erosion, and may introduce or increase the amount of invasive species. Direct effects of the Proposed Action include a potential increase in trampling and corresponding soil compaction, especially near water troughs. Placement and utilization of watering troughs to control livestock movements and provide adequate water supplies may reduce trampling, compaction, and degradation of water sources.

Grazing would not be expected to result in long-term adverse impacts to groundwater due to the small geographic scale of grazing operations. Direct effects of grazing could be decreased infiltration caused by loss of vegetation, compaction of soil, and increased runoff. When vegetated soil becomes more exposed, greater evaporation and loss of soil moisture can occur. By carefully monitoring and managing grazing and implementing BMPs, adverse impacts to groundwater would be avoided.

Fire Regime Group II

The environmental consequences of the Proposed Action for water resources in FRG II would be the same as those described in FRG I**.**

Fire Regime Group III

The environmental consequences of the Proposed Action for water resources in FRG III would be the same as those described in FRG I.

Fire Regime Group IV

The environmental consequences on water resources in FRG IV would be expected to be similar to those described for FRG I**,** in addition to those described below.

Effects of Prescribed Burns

In the Great Basin Region, factors including soil erodibility, soil water repellency, slope, surface roughness, and groundcover are all relevant effects fire may have on water resources (Miller et al., 2013). As with other habitats, consumption of vegetation by fire reduces rainfall interception and surface water retention, facilitates runoff due to lack of soil stabilization structure, and increases soil erosion potential (Miller et al., 2013). These effects are mainly observed under shrub canopy, where fire consumes organic matter (Miller et al., 2013).

Effects of Mechanical/Hand Treatment

Effects of mechanical and hand treatments on water resources would be similar to those as described in FRG I. To address soil compaction and reduction in runoff potential in the Great Basin Region and similar habitats, emphasis should be placed on distributing slash vegetation in bare areas (Miller et al., 2013).

Fire Regime Group V

The environmental consequences on water resources in FRG V would be expected to be similar to those described for FRG I.

3.3.2.2 No Action Alternative

Under the No Action Alternative, potential long-term, indirect adverse effects may occur from the presence of invasive plants and buildup of fuels. If left untreated, invasive plants generally create adverse conditions for surface waters, groundwater, wetlands, and floodplains, by altering the hydrology, creating unfavorable drainage conditions by blocking waterways, potentially resulting in damage to infrastructure from floods. Furthermore, if invasive species are left untreated, accumulation of plant biomass would contribute to large quantities of fuels, increasing the risk of wildfire. Wildfires adversely affect water resources from removal of vegetative cover, erosion of exposed soils, and runoff to waterbodies causing sedimentation.

3.4 EARTH RESOURCES

3.4.1 Affected Environment

The affected environment for earth resources includes all DAF-managed lands where proposed fuels treatments would occur. These lands encompass a vast array of soil types distributed across the continental United States and Alaska. Given the wide geographic distribution of DAF-managed lands throughout the United States, it is not possible at the programmatic level of analysis to identify specific soil types that would potentially be affected by the Proposed Action. Because the effects of proposed fuels treatments would differ among soil types, each installation would identify any sensitive soil types in the area before these activities would be implemented. Site-specific soil maps for installations can be found in either the installation INRMP or by consulting the Web Soil Survey application provided by the Natural Resource Conservation Service (NRCS) and USDA.

3.4.1.1 Fire Regime Group I

Installations with FRG I as their predominant FRG are located in the Southeast (18 installations), Northeast (10 installations), South Central (8 installations), Southwest (1 installation), and North Central (1 installation) regions. Soils within FRG I have developed in habitats adapted to frequent low or mixed intensity fires. In some ecosystems, such as longleaf pine ecosystems, decomposition rates of organic matter (pine needles) are slow, reducing available soil nutrient inputs. In the long term, fire within these ecosystems is important for decomposition of organic matter and subsequent nutrient cycling (Christensen, 1993).

Mineral soils are formed primarily from weathering of rocks and other non-living materials, are primarily composed of inorganic material (sand, silt, and clay), and typically contain less than 30 percent organic matter. These soils are more predominant in drier climates or areas with steep slopes, but can be found throughout the United States. Mineral soils tend to be poor conductors of heat (Busse et al., 2014).

Organic soils are formed from sedimentation and primarily composed of decayed living materials (organic matter) such as plant and animal remains. These soils often contain greater than 30 percent organic matter and are common in areas with high amounts of vegetative biomass, providing organic material that gradually decays into soil. Generally, as average annual precipitation increases, levels of soil organic matter increase. Organic soils are often found in depressions at the bottom of hills or floodplains and in grasslands. Runoff facilitates accumulation of organic matter into low-lying areas, and grassland soils incorporate high amounts of organic material through decomposition of roots, vegetative biomass, and burned vegetation.

Forest soils are generally characterized as highly porous with high accumulation of organic matter on the surface layer with broken down organic materials in the litter and duff layer (Neary, 2005). Soil properties in forest soils are influenced by tree species via water availability and the nutrient availability from composition of and subsequent rate of decomposition of organic matter (Adams et al., 2019). Temperate deciduous forest soils are generally higher in available organic matter than are temperate evergreen forest soils (Adams et al., 2019). Woodland, grassland, and forest soils commonly develop deep and extensive root systems (Neary, 2011). The resulting soil environment is also highly porous as a result of disturbance and manipulation by root growth, freeze/thaw cycles, burrowing animals, and a diverse suite of invertebrates, worms, and insects (Neary, 2011; Neary, 2005). High accumulation of organic materials facilitates water infiltration, preventing accumulation of a soil crust (Neary, 2011). Within forest soils, water infiltration rates can vary based on soil structure; humid climates often allow for higher water infiltration rates, whereas arid/semi-arid climates have tighter soil structure and slower infiltration rates (Neary, 2005).

Grassland soils are dark, fertile, deep-rooted soils that are nutrient-dense (University of California Museum of Paleontology [UCMP], 2002). Temperate grasslands occur mostly in the north and South Central regions as well as western California and southern Florida (US Forest Service [USFS], 2013). Globally, grasslands store approximately 34 percent of the world’s terrestrial carbon stock, most of which is found in soil (USFS, 2013). Soil composition in grasslands vary based on location, determined largely by temperature, rainfall, and soil conditions (UCMP, 2002). North American grasslands are historically adapted to fire, via lightning strikes, and are commonly managed by prescribed fire (USFS, 2013). Fire aids in the reduction of trees and shrubs and supports native forbs that otherwise may be excluded (USFS, 2013).

3.4.1.2 Fire Regime Group II

The affected environment for earth resources in FRG II is the same as that of FRG I with the following exceptions.

Installations having FRG II as their predominant FRG are located in the South Central (11 installations), North Central (3 installations), Northeast (1 installation), Northwest (1 installation), Southeast (1 installation), and Southwest (1 installation) regions. Soils within FRG II have developed in response to habitats adapted to frequent, high-intensity fires.

3.4.1.3 Fire Regime Group III

The affected environment for earth resources in FRG III is the same as those described in FRG I with the following exceptions.

Earth resources in FRG III occur at installations in the Southeast (2 installations) and Northeast (1 installation) regions. Only three installations have FRG III as their dominant FRG – Barksdale AFB in Louisiana, Columbus AFB in Mississippi, and Dover AFB in Delaware. Soils within FRG III have developed in response to habitats adapted to frequent high-intensity fires.

3.4.1.4 Fire Regime Group IV

The affected environment for earth resources in FRG IV is similar to that described for FRG I, with the following exceptions.

Biological soil crusts, commonly found on the soil surface in arid and semi-arid ecosystems, are formed by living organisms such as mosses, lichens, algae, cyanobacteria and microfungi, and their by-products (Miller et al., 2013, Neary et al., 2005; Rosentreter et al., 2007). These organisms help to increase soil stability, process atmospheric nitrogen into bio-available nitrogen, and increase bioavailability of phosphorus (Rosentreter et al., 2007). Known biological soil crusts found in the United States are located within the hot deserts (Mojave, Chihuahun, and Sonoran), cool deserts (Great Basin and Colorado Plateau), the coastal woodlands, chaparral and islands of California, and subhumid grasslands of the Great Plains (Rosentreter and Belnap, 2001; Rosentreter et al., 2007).

Installations having FRG IV as their predominant FRG are located in the Southwest (6 installations) and Northwest (2 installations) regions, and Alaska (2 installations). Soils within FRG IV have developed in habitats adapted to less frequent fires of high severity, replacing greater than 75 percent of the dominant overstory vegetation.

3.4.1.5 Fire Regime Group V

The affected environment for earth resources in FRG V is similar to that described for FRG I, with the following exceptions.

Installations having FRG V as their predominant FRG are located in the Southwest (6 installations), Northwest (1 installation), Northeast (1 installation), and South Central (1 installation) regions, and Alaska (1 installation). Soils within FRG V have developed in habitats that infrequently are modified by fire. While fire severity within FRG V can vary, fire severity is generally high, replacing 75 percent of the dominant overstory vegetation.

The presence of invasive species within some habitats in FRG V, such as at Barry M. Goldwater Range, has the potential to increase the occurrence of fires, influencing wildfire frequency and severity, resulting in a substantially altered fire regime (DAF, 2018).

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

The Proposed Action would have an adverse impact on earth resources if any the following were to occur as a result of implementation:

- A decrease in soil productivity or fertility; or
- Changes to soil composition, structure, or function within the environment; or
- An increased potential for soil erosion.

The effects of proposed fuels treatments on soils would depend on a variety of factors: elevation, soil type, soil content, soil moisture, topography, and fuel loads, as well as humidity level, fuel moisture contents, wind speed, and ambient temperature. These factors influence the temperature of a fire (Neary et al., 2005). Soils with a higher moisture content have lower heat penetration than dry soils (Busse et al., 2014). Because of this variation, this effects analysis is general, and may not encompass all site-specific conditions and effects.

Fire Regime Group I

Potential Effects of Prescribed Burns

Prescribed burns of low-intensity, cooler-burning fires would consume plant litter and some aboveground plant parts, but likely not heat the soil substantially, allowing root systems to remain intact and hold soil in place (Neary et al., 2005). Increases in soil temperature would be of short duration. The duration and intensity of heat generated during prescribed fires would not be anticipated to consume more than the surface litter layer, thereby minimizing loss of soil organic matter. Prescribed fire can increase availability of many important soil nutrients, such as calcium, phosphorus, and nitrogen, and can increase soil pH (Kreye et al., 2020). The increase in nutrients stimulates new plant growth, resulting in rapid improvement of soil retention (Kreye et al., 2020). However, fire effects on soil chemistry vary widely, with some studies documenting little to no effect on pH, nitrogen, phosphorous, while others have documented effects on these components (Vose et al., 1999). Vose et al., 1999, among others, have attributed fire effects on soil minerals such as potassium and magnesium to seasonal variation in sampling soil chemistry. Furthermore, fire effects on soil chemistry depend largely on site-specific and fire-specific attributes (Vose et al., 1999).

Fire in oak ecosystems generally consumes only a portion of the available organic material, with little to no adverse effects (Vose et al., 1999). Prescribed, cool-burning fire in mixed hardwood-conifer forests consumes surface litter and have low soil temperature increases that are short-lived (Neary et al., 2005). When forest duff layers are completely consumed, soils can experience heat damage (Busse et al., 2014).

Grassland fires have a short burn duration because of the predominantly fine fuels and generally lower fuel availability, soil heating is generally less (Busse et al., 2014, Neary et al., 2005). Because of the lower fuel availability, both prescribed burns and wildfires in grasslands show minimal differences in soil impacts (DeBano et al., 1998; Neary and Leonard, 2021). Historically, grasslands ecosystems are adapted to fire and require it to maintain ecosystem function.

Prescribed fires that occur in sandy soils, such as on Eglin AFB and Tyndall AFB, would be less likely to cause soil damage from high-intensity fires; habitats on these two installations are highly adapted to fire. Of the three soil components (sand, clay, and silt), sand is affected by fire only at extreme soil temperatures. However, consumption of large volumes of organic matter on the soil surface during fires can reduce the amount of soluble nutrients that integrate into sandy soils by increasing the amount of leaching, adversely affecting site fertility (Neary et al., 2005).

Effects from high severity fires include reduced water infiltration, soil structure collapse and increase in bulk density, collapse in soil structure, and soil compaction and water repellency (Neary, 2011). Wildfires and prescribed burns of medium and high-intensity, hotter-burning fires may occur on installations where long-term fire suppression has resulted in accumulation of fuels and densely populated vegetative stands. High severity fires that result in higher soil temperatures would be more likely to adversely affect soil microbial populations and have long-lasting effects on their population size, diversity, and function, with recovery estimates taking 1 to 4 years, sometimes as long as 12 years (Neary et al., 2005). Soil structure collapse results in higher bulk density of soils and subsequently less pore space, increasing soil compaction that is further exacerbated by rainfall compaction (Neary, 2011). Intense soil heating can create water repellant layers and contribute to soil erosion (Neary et al., 2005) and produce temperatures sufficient to kill entire seedbanks (Busse et al., 2014). On higher severity prescribed burns, these effects would be minimized by creating smaller burn units to reduce overall fire intensity. Over time, these areas of long-term fire suppression would be replaced by low-intensity, more frequent prescribed burns to reflect historical natural burn regimes and reduce overall accumulation of fuel loads. Higher intensity fires would potentially cause sterilization of soils on installations such as Dare County Range and Joint Base Elmendorf-Richardson, where soils are predominantly organic. They also would potentially cause sterilization on installations where invasive grasses are dominant, such as on Buckley SFB and Mountain Home AFB, or where fire suppression has increased fuel loads.

Slash burning can sterilize soil as a result of exposure of the underlying soil to extended heating (Neary et al., 2005). However, this effect is often limited to a smaller footprint of an area and would potentially be an overall benefit by reducing total fuel loads across the landscape. In forest floors with more organic soils, slash burning can have adverse effects on soil microbial communities (Neary et al., 2005). In mineral soils, microbial communities often recover more quickly from slash burning (Neary et al., 2005). Effects on soil temperature under slash piles can be alleviated by burning when soil moisture is 20 percent or greater (Busse et al., 2010). Creating smaller piles of slash across the landscape can reduce potential adverse effects of high temperatures on soils (Busse et al., 2014).

Potential Effects of Mechanical/Hand Treatment

Effects of mechanical treatment on soils include soil compaction and disrupted soil structure. Use of heavy machinery compacts soils, disrupting soil structure. Mechanical treatment would remove ladder and canopy fuels and pile them on site when possible. Soil compaction and removal of vegetation would likely result in an increased potential for erosion. Soil compaction can break apart soil aggregates, which directly affects water infiltration, air movement, and rate of chemical transport in soils by reducing pore space between aggregates and increasing bulk density. Short-term, localized effects on soil from wind and water erosion would occur from disturbing the soil surface through tillage or other mechanical methods and creation of fire lines and fire breaks around a burn unit. The amount of soil loss would depend on the type of treatment, the texture of the soil, and the topographic setting of the Proposed Action. As the revegetation process occurs, loss of soil from erosion would be reduced. BMPs, described in **Section 2.5**, would be employed to avoid or minimize the potential for adverse impacts, such as utilization of existing roads, using equipment with wide treads, working when soils are dry, and making only one pass over an area (Bennett and Fitzgerald, 2008; Busse et al., 2014), would reduce the potential for compaction and erosion.

Effects of hand treatments on soils would minimize soil compaction and disturbance. Using hand tools to remove vegetation would substantially reduce direct impacts to soil. Localized soil disturbance and soil compaction would initially occur from vehicles accessing treatment sites. While removal of vegetation via hand treatments would disrupt soil, it is unlikely to have an adverse effect to soil structure and would only slightly increase erosion potential by removing soil stabilizing vegetation. Overall, manual treatments would have less direct effects than other described methods.

Potential Effects of Chemical Treatments

Potential effects of herbicide treatments on soil include a decrease in vegetative biomass, compaction, and erosion. Herbicide treatments would reduce the amount of standing vegetation, indirectly decreasing organic matter and nutrient availability, and thereby increasing susceptibility to erosion. Herbicides used would be USEPA-approved, applied by a licensed applicator, and applied according to label instructions. Short-term adverse impacts to the organic layer of soil via compaction would occur from use of all-terrain vehicles (ATVs) or tracked-based equipment to apply herbicides. Herbicides would likely be used in conjunction with mechanical or hand removal strategies. The potential for adverse impacts would be minimized through adherence to applicable BMPs (see **Section 2.5**). BMPs include establishing buffer zones around sensitive habitats and reseeding with native vegetation.

Potential effects of commonly used fire retardants include increases in soil nutrients and changes in plant communities and subsequent water availability. A long-term study on the effects of long-term fire retardant use on plant communities showed that retardant use can alter availability of soil nutrients and stimulate plant productivity, resulting in potential shifts in communities (Marshall et al., 2016). The use of phosphate-based retardants is better for the environment than other solutions, as the residual phosphate that is left after the burn will provide nutrients for soil health and plant uptake. Targeted application of retardant on native vegetation, and avoiding application in and around invasive plants, will favor native species over invasives; these steps help to provide sustainability in favor of desirable endemic species (Raley, 2023). Individual and plant community responses are extremely complex and highly-site specific (USFWS, 2023). Short-term effects of fire retardant include increase in salinity, and deposition of elements such as phosphorus, sulfates, and readily available nitrogen, which can stimulate plant growth and may skew towards favoring non-native species (Hopmans and Bickford, 2003; Marshall et al., 2016). Effects of carbon and total nitrogen inputs would be likely within natural environmental variation (Hopmans and Bickford, 2003; Yu et al., 2021). Long-term effects range from no effects (Yu et al., 2021) to elements leaching into the subsoil and small decreases in soil pH (Hopmans and Bickford, 2003).

Potential Effects of Targeted Grazing

Potential effects of targeted grazing on soil include short-term adverse effects from soil compaction, erosion, and reduction in vegetative biomass. When targeted grazing is implemented, buffer zones around riparian zones and waterways would be identified and established to protect soils in these areas from adverse impacts. Soil compaction may be greater where a large number of animals congregate such as near water supplies and along fence lines and gates. Targeted grazing often results in fewer adverse impacts on soils compared with other fuel reduction strategies because it involves less soil compaction, surface disturbance, and root disturbance, thus reducing erosion potential comparatively (Burrows et al., 2015; Taylor, 2006).

Long term, beneficial effects of targeted grazing include reduction of invasive annual grasses and noxious weeds, resulting in increased cover of native grasses and forbs, improved soil stability, organism diversity, and nutrient cycling, which in turn increase water infiltration rates (Mosley and Roselle, 2006).

Potential Effects of All Proposed Fuels Treatments

Potential short-term adverse impacts on soils may occur from all fuels treatment types. Impacts on soils from these activities may include increased soil erosion, increased soil temperature, changes in soil chemistry, consumption of organic matter, and soil contamination from fire retardants and use of herbicides. Soil erosion would be controlled using best management practices as described.

Long-term impacts on soils from implementation of the Proposed Action would be beneficial, ultimately resulting in a decrease of size, frequency, and severity of wildfires, which would reduce soil erosion, runoff, and sedimentation from wildfires. Beneficial long-term impacts on soils would also result from reestablishment of a natural, fire-driven nutrient cycle and increased stability of the soil strata, given increased native herbaceous ground cover and the reduced threat of severe wildland fire.

Fire Regime Group II

The environmental consequences of the Proposed Action on earth resources in FRG II would be similar as those described under FRG I.

Fire Regime Group III

The environmental consequences of the Proposed Action on earth resources in FRG III would be similar as those described under FRG I.

Fire Regime Group IV

The environmental consequences of the Proposed Action on earth resources in FRG IV would be similar as those described under FRG I, in addition to those described below.

Effects of Prescribed Burns

In the Pacific Northwest, such as on Fairchild AFB and Mountain Home AFB, high intensity burns can result in temperatures that are lethal to fungi and fine tree roots at depths at least to 4 inches, persisting as long as 13 hours (Watts, 2018). Some habitats within this region are adapted to fire, and soil microorganisms such as ascomycete fungi respond positively to high-intensity fire. Specifically in Ponderosa Pine (*Pinus ponderosa*) habitat, fuels treatments can have beneficial effects on soil microbes and seedling trees by controlling burn severity (Cowan et al., 2016), as these habitats were historically maintained and managed by periodic fire (Fitzgerald, 2005).

Low severity fire effects on soil in the Great Basin Region, such as on Mountain Home AFB, Hill AFB, NTTR, and UTTR, include greater than 50 percent unburned patches, less than 50 percent litter consumption, no fire-induced water repellency, and unchanged surface soil structure (Miller et al., 2013, Parsons et al., 2010). In moderate severity fires, effects include 15 to 50 percent unburned patches, 50 to 80 percent litter consumption, weak to medium water repellency, and slight to no alteration of surface structure (Miller et al., 2013, Parsons et al., 2010). In high severity fires, effects include less than 15 percent unburned patches, greater than 80 percent litter consumption, strong water repellency, and surface aggregate severely reduced or degraded (Miller et al., 2013, Parsons et al., 2010).

Fire effects on soils in chaparral habitats or mixed shrub-chaparral habitats within FRG IV would be similar to those as described in FRG I; low-density sites have low ground and canopy fuels, resulting in minimal soil heating, and no effect to soil structure and roots (Parsons et al., 2010). In habitats with high density chaparral, low-severity burns result in minimal soil heating, causing minimal effects to soil, whereas high-severity burns can result in loss of soil structure, and completely consumed surface layer (Parsons et al., 2010). These effects are similar for the same burn severities and vegetation densities for mixed conifer forests, sagebrush, and grasslands within this region (Parsons et al., 2010).

Fire effects on biological soil crusts depend on fire intensity and composition of the crusts (Hilty et al., 2004; Johansen et al., 1993). Similar to low-intensity fire effects on other soils, low-intensity fires do not significantly alter biological soil crusts (Johansen et al., 1993, Warren et al., 2009), whereas high intensity fires can significantly reduce their presence (Warren et al., 2009) with potential recovery rates of soil crusts between a few years to more than 30 years (Miller et al., 2013).

Fire effects on nutrient levels in soil in the Great Basin are highly dependent on environmental factors such as soil type, species composition and abundance, and fuel loads, and fire severity and soil heating during burns (Miller et al., 2013). Total nitrogen and carbon loss varies as most of the nitrogen pool is located soil below ground (Miller et al., 2013, Rau et al., 2010). Carbon availability in these ecosystems shows little variance pre- and post-fire, but evidence suggests that a community transition to invasive cheat grass could result in losses of soil carbon (Rau et al., 2011).

Peatland soils such as those on Clear Space Force Station and Eielson AFB in Alaska can intensively burn when moisture content is low and the peat is dried out (Busse et al., 2014). When peatland soils are wet and a result of high accumulation of organic matter, fire can smolder in peatland soils, resulting in high soil temperatures over long periods of time, causing damage to the soil (Neary et al., 2005). Low severity fires may potentially adversely affect soil microbial populations in the upper soil layers but would not have a strong adverse effect in layers just below the surface, and overall microbial recovery is quick (DeBano, 2000; Neary et al., 2005).

Effects of Mechanical/Hand Treatment

Effects of mechanical and hand treatment in desert shrub habitat can be advantageous where fuels are not sufficient to carry fire (Miller et al., 2013). Furthermore, fire can actually lower a community’s resistance to invasive grasses (Miller et al., 2013). With mechanical or hand treatments, invasive species such as cheatgrass still may increase, albeit at limited rate in comparison to fire; this increase is further limited depending on rainfall (Miller et al., 2013).

Fire Regime Group V

The environmental consequences of the Proposed Action on earth resources in FRG V would be similar as those described under FRG I, in addition to those described below.

3.4.2.2 No Action Alternative

Under the No Action Alternative, an uncontrolled wildfire would be more likely to occur, which could potentially cause adverse impacts to soils. A high severity wildfire would likely alter the cycling of nutrients; the physical and chemical properties of soils; and the temperature, moisture, and biotic characteristics of existing soils. Severe fires can kill microorganisms, partially sterilize soil, increase soil bulk density, and reduce porosity. Loss of soil organic matter and increased bulk density can decrease water storage capacity of soils.

3.5 CULTURAL RESOURCES

3.5.1 Affected Environment

The Area of Potential Effects (APE) is defined as the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR § 800.16[d]) and thereby diminish their historic integrity. The APE for cultural resources includes all DAF-managed lands on which proposed fuels treatments would occur. The APE is used as the Region of Influence (ROI) or affected environment for the cultural resource analysis in this PEA.

Given the expansive geographic distribution of DAF-managed lands throughout the United States, it is not possible, at this programmatic level, to identify specific significant cultural resources, including architectural resources, archaeological sites, and Traditional Cultural Properties and sacred sites that would potentially be affected by the Proposed Action. Therefore, the DAF would conduct consultation in accordance with Section 106 of the National Historic Preservation Act (NHPA) before proposed fuels treatments would be implemented at each installation.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

While implementation of Alternative 1 would ensure that a programmatic approach to fuels reduction and management is used to optimize both mission protection and ecosystem management, Section 106 compliance would be accomplished at the installation level. The effects of prescribed burns on cultural resources depend on factors that vary from place to place, including physical factors such as fuels, terrain, site type, and cultural materials present. The first step in protecting cultural resources during prescribed burns would be consistent and thoughtful fire management planning. Planning provides the framework to define and identify vulnerable significant cultural resources and develop tailored protection measures for them based on proposed fuel management approach. Highly varied climate patterns, landforms, and distinct culture histories have resulted in diverse and specialized cultural traditions and adaptations over thousands of years. Therefore, the effects of prescribed burns on cultural resources, and appropriate ways to manage for these effects, would be context dependent (Winthrop, 2004).

Many of the cultural resources included in the APE for this analysis have likely been exposed to fire at some point in the past; however, this past exposure does not mean that these resources do not have the potential to be damaged and adversely affected by additional exposure to extreme temperature and other fuels management approaches. The severity of potential damage depends on the intensity and duration of a fire, as well as whether cultural resources are built, located on the ground surface, or buried.

All fuels reductions identified above would be subject to site-specific compliance with Section 106 of the NHPA, including definition of site-specific APEs, development of site-specific historic properties inventories, and site-specific consultation (as outlined in implementing regulation 36 CFR Part 800; for a flow-chart of fuels reduction strategies included in the PEA, the intended result, and additional consultation requirements, see **Figure B-1**). Native American religious concerns and sacred sites would be further protected through compliance with EO 13007 (Indian Sacred Sites), The Religious Freedom Restoration Act of 1993, and the American Indian Religious Freedom Act of 1978. It is important to note that many Native American tribes have deeply seated, and at times complicated, religious and cultural relationships to fire (Hokanson et al., 2008). In addition to adherence to the formal regulations and guidance that govern government-to-government consultation, it is important for Tribes to be intimately involved with planning fuels reduction strategies when potential cultural and Tribal resources could be effected.

Prescribed fire, through proper planning and site surveys, can protect archaeological resources and allow reintroduction of fires as a natural process in fire-dependent ecosystems. However, fuels reduction approaches each present their own potential to adversely affect significant cultural resources.

- Prescribed Burns – though controlled, depending on the intensity and duration of the fire, as well as unexpected weather changes, prescribed burns would have the potential to directly and adversely affect cultural resources by destroying or significantly altering the full range of material culture, including such examples as historic architectural features and structures constructed using wood and other organic or fragile material; historic cans, glass, and ceramics; prehistoric stone tool and pottery fragments; historic and prehistoric bone and shell fragments; and, historic and prehistoric rock art carved or painted onto stone outcroppings. There are a number of indirect potential fire effects to cultural resources, including increased visibility from vegetation burn-off and consequently greater vulnerability to vandalism; soil erosion and loss of archaeological data; increased damage from rain, new drainage patterns, flood; and increased rodent and insect activity within site soil matrix (Winthrop, 2004)
- Mechanical Treatment – would have the potential to directly and adversely affect cultural resources by destroying or disturbing intact cultural deposits when heavy equipment is used to reduce fuel loads, rearrange fuel structure, and remove undesirable species in areas where prescribed fire is not a viable option.
- Hand Treatment – though less impactful by nature than mechanical treatments, would also have the potential to directly and adversely affect cultural resources by destroying or disturbing intact cultural deposits. Surface and near-surface cultural material can be easily displaced by rakes, axes, hoes, shovels, and pulaskis as well as tracks made by vehicles necessary to reach remote locations.

- Chemical Treatment – application of fire retardant and other chemical products would have the potential to directly and adversely affect cultural resources. Specifically, the USDA Wildfire Chemical Systems website has brief descriptions of the types of chemical retardants, foams, and water enhancers and their potential effects on structures. These effects can be extrapolated to a range of archaeological material. For example, long-term retardants and water enhancers contain salts, which can be desiccants. Desiccants can damage old wood, may cause spalling in sandstone, and can be difficult to remove (Winthrop, 2004).
- Targeted Grazing – may be a more culturally accepted and generally speaking less invasive methods for approaching fuels reduction. It has been specifically recommended by Tribes, for example, as a more natural option for controlling vegetation growth around rock art sites (Hokanson et al., 2008). Grazing would still have the potential to disturb intact, fragile surface deposits and has the potential to adversely affect historic properties.

To summarize, the Proposed Action Alternative would potentially have direct and indirect effects on cultural resources. Site-specific analysis would be required to evaluate the potential for installation-level fuels reduction strategy to impact cultural resources. In addition to Section 106 (and its implementing guidance in 36 CFR Part 800) and standard operating procedures developed to address fire planning at the installation-level, the document *Bare Bones Guide to Fire Effects on Cultural Resources for Cultural Resource Specialists* (Winthrop, 2004) offers technical information that cultural resource specialists can use to craft locally and regionally appropriate strategies for protecting cultural resources within the context of fire and fire planning.

3.5.2.2 No Action Alternative

Fuels that would remain untreated under the No Action Alternative would continue to pose a risk of ignition of uncontrolled wildfires that would potentially result in long-term adverse effects to historic properties and cultural resources. As noted above, fire effects to cultural resources vary depending on temperature and duration of exposure to heat. Generally, higher temperatures and longer duration of exposure to heat increase the potential for damage to cultural resources. As such, wildland fire (uncontrolled) is regarded as potentially more destructive to cultural resources than prescribed fire (controlled) based solely on the nature of the generalized fire characteristics and exclusive of other methods of fuels reduction that allow for planning, avoidance, and mitigation.

3.6 HUMAN HEALTH AND SAFETY

3.6.1 Affected Environment

The ROI for Human Health and Safety (HH&S) includes the targeted areas on DAF-managed lands where the proposed fuels treatments would be conducted and adjacent or nearby areas (on-base and off-base) where indirect effects from proposed fuels treatments would occur.

The Occupational Safety and Health (OSH) Act of 1970 (29 CFR Part 1960) is the primary federal statute for regulating the safety and health of workers in the United States. The OSH Act established the Occupational Safety and Health Administration (OSHA), which is the primary federal agency with responsibility for promulgating and enforcing OSH Act requirements. Other federal agencies, such as the USEPA, establish and enforce regulations intended to safeguard public health and safety under authority granted by the CWA, Clean Air Act (CAA), Toxic Substances Control Act, and other federal legislation. As applicable, the DoD administers regulations and requirements promulgated by OSHA, USEPA, and other federal agencies, as applicable, to protect the health and safety of military personnel, civilian employees, and visitors on its lands.

Representative DoD and DAF requirements addressing the health and safety of military personnel and civilian workers are set forth in the following:

- DoD Directive (DoDD) 4715.1E, (December 30, 2019) – establishes policies on environment, safety, and occupational health to sustain and improve the DoD mission.
- DoDI 6055.01, DoD Safety and Occupational Health Program (April 21, 2021) – establishes DoD policy to protect DoD personnel worldwide from accidental death, injury, or occupational illness and apply risk management strategies to eliminate occupational injury or illness and loss of mission capability and resources.
- Air Force Policy Directive 90-8, Environmental, Safety & Occupational Health Management and Risk Management (December 23, 2019) – implements DoDD 4715.1E and establishes policies to ensure compliance with applicable federal, state, local, and DoD environmental, safety, and occupational health statues, policies, and regulations.
- Air Force Instruction (AFI) 91-202, US Air Force Mishap Prevention Program – establishes requirements to minimize loss of Air Force resources and protect Air Force personnel from death, injuries, or occupational illnesses by managing risks on and off-duty.

The policy documents listed above are not comprehensive; other health and safety requirements may also be applicable to the Proposed Action evaluated in this PEA.

In addition to the federal agency, DoD- and DAF-specific health and safety requirements listed above, the proposed fuels treatments implemented by the AFWFB are planned and conducted in accordance with applicable NWCG guidance. The NWCG also adopts and adheres to the health and safety requirements of the USFS, including but not limited to the following:

- Forest Service Handbook 6709.11, Health and Safety Code Handbook, Chapter 50 – Employee Safety, Security, and Health
- USFS Fire Management standard operating procedures

With respect to the Proposed Action, DoD, DAF, and NWCG requirements described above are intended to safeguard the health and safety of workers conducting the proposed fuels treatments by specifying general health and safety and physical fitness standards, the amount and type of training required, use of personal protective equipment, administrative controls, engineering controls, permissible exposure limits for potential stressors, and other requirements. The NWCG and AFWFB also safeguard the health and safety of people living or working near fuels treatment areas by requiring extensive planning and coordination processes before each treatment is conducted; adherence to applicable procedures and regulatory requirements to prevent or minimize migration of smoke, ash, noise, sediment, and pollutant runoff, and other effects beyond the treatment area, to the extent feasible (see **Section 2.5**); and completion of detailed close-out procedures after each treatment is applied to ensure that potential adverse on-site or off-site effects would not occur. Additionally, AFWFB personnel conducting fuels treatments would be required to operate all tools and equipment in accordance with manufacturers' instruction manuals, and all herbicides used during chemical treatments must be handled, mixed, and applied by licensed and certified personnel in accordance with manufacturers' label directions.

All DAF installations operate on-base police/security and Fire and Emergency Services (FES) to provide immediate response to situations or conditions potentially threatening HH&S. On-base FES often maintain formal or informal mutual aid agreements with off-base civilian FES to provide additional or supplemental support when needed. These services ensure that immediate response to HH&S emergencies is available 24 hours a day, 7 days a week. Off-base hospitals or medical facilities may be accessed relatively quickly for DAF installations in urbanized areas, but access from bases in rural or undeveloped areas may be more limited.

3.6.2 Environmental Consequences

Adverse effects on HH&S would be considered significant if the Proposed Action resulted in one or more of the following:

- Human death, permanently debilitating injury, or other injury requiring off-site treatment at a hospital or medical facility.
- Planning or executing proposed fuels treatments that does not prevent or optimally minimize health and safety risks to workers and the public through adhere to applicable federal, state, and local health and safety requirements, including requirements of the DoD, DAF, NWCG, and AFWFB.

3.6.2.1 Proposed Action

To varying degrees, fuels treatments included in the Proposed Action would temporarily increase the potential for risks and hazards to the health and safety of workers conducting the treatments as well as people living or working adjacent to or near proposed treatment areas. In the long term, the Proposed Action would have substantial beneficial effects on HH&S by removing fuels that could contribute to ignition of uncontrolled wildfires and potentially result in human death, injury, or catastrophic property damage or destruction.

Given the geographic distribution of DAF-managed lands where the Proposed Action would be implemented and the varying types of FRGs present on each installation, it is not possible at this programmatic level to identify each type of hazard that would pose a potential risk to workers performing the proposed fuels treatments and people living and working near each targeted treatment area. Generally, however, the highest potential for temporary direct and indirect adverse effects on HH&S would be borne by workers performing the proposed fuels treatments, while the potential for adverse effects on people living or working adjacent to or near treatment areas would be less severe and indirect.

Given the physical nature of the proposed fuels treatments and their execution entirely in outdoor environments, health and safety risks to workers would include increased potential for slips, trips, and falls, and ergonomic or repetitive motion injuries; prolonged exposure to the sun and elements (e.g., heat, cold, wind, and precipitation); exposure to or interaction with biological hazards (e.g., ticks, mosquitoes, poison ivy, and wildlife); and exposure to hazardous and toxic materials. Other potential risks or hazards to workers, regardless of the geographic location or FRG where proposed fuels treatments would occur, would include some or all of the following:

- Prescribed Burns: inadvertent inhalation of smoke, ash, or other particulate matter; accidental burns. visibility impairment caused by smoke.
- Mechanical Treatments: accidental lacerations, crushing, or severing injuries from heavy equipment; exposure to elevated noise levels, and inhalation of exhaust fumes generated by heavy equipment.
- Hand Treatments: accidental lacerations or severing injuries from hand-held manual or power tools.
- Chemical Treatments: chemical contact on exposed skin, accidental ingestion of herbicides, or inhalation of associated fumes.
- Targeted Grazing: injuries from contact with livestock, such as bites, kicks, trampling, crushing; exposure to animal-borne parasites or zoonotic diseases.

Potential risks and hazards to people adjacent to or near targeted treatment areas would include, but would not be limited to, some or all of the following:

- Prescribed Burns: inadvertent inhalation of smoke, ash, or other particulate matter generated by fires. visibility impairment caused by smoke.
- Mechanical Treatments: exposure to elevated noise levels and inhalation of exhaust fumes generated by heavy equipment.

Potential risks and hazards to HH&S from hand, chemical, and targeted grazing treatments would primarily be confined to the targeted treatment area and would have little potential to affect people outside the treatment area.

To prevent or minimize potential risks to the health and safety of workers and people outside treatment areas, each fuels treatment would be planned and executed in strict accordance with applicable procedures and regulatory requirements, including those described in **Section 3.7.1** (also see **Section 2.5**). Planning procedures would include extensive coordination with on-base FES and police/security as well as off-base FES and police as applicable if the potential for off-base effects is identified. Before each treatment would be implemented, managers would prepare a site-specific health and safety plan containing guidance and direction to prevent or minimize potential risks associated with each fuels treatment activity. These plans would include, at a minimum, emergency response and evacuation procedures; operational manuals; personal protective equipment requirements (e.g., hardhats, boots, gloves, safety glasses, appropriate clothing or protective gear, and respirators); protocols and procedures for using associated tools, equipment, chemicals, and hazardous substances; information on the effects and symptoms of potential exposures; guidance regarding hazard identification; and procedures for identifying and responding to situations requiring FES, first aid, or other medical attention. Site-specific health and safety plans would be approved by appropriate AFWFB and on-base personnel and would be read and understood by all treatment team members before work begins.

Adherence to applicable requirements of site-specific health and safety plan and execution of proposed treatment in accordance with all applicable procedures and regulatory requirements would also prevent or minimize potential effects on people living and working near the treatment area. Before work begins, the boundaries of each treatment area would be delineated with signage, flagging, temporary fencing, or other highly visible markings to prevent unauthorized access.

Treatment managers would also coordinate with off-base FES, police, and medical facilities as needed to notify them of the proposed activity, identify the types of emergency response that may be required, plan access routes to the treatment site and transport routes to medical facilities, and establish procedures in the event an emergency response is needed.

Adherence to applicable health and safety requirements would ensure that the Proposed Action would have no significant direct and indirect adverse effects on the health and safety of workers conducting treatments and people living and working near treatment sites. Any potential risks or threats to HH&S would be temporary because they would cease when each treatment activity is completed and closed out. Therefore, potential temporary adverse effects on HH&S resulting from the Proposed Action would not be significant. The long-term beneficial effects of the Proposed Action on HH&S may be substantial.

3.6.2.2 No Action Alternative

The No Action Alternative would have direct adverse effects on the health and safety of AFWFB personnel. Fuels that would remain untreated under the No Action Alternative would continue to pose a risk of ignition of uncontrolled wildfires that could result in adverse effects on HH&S from human death or injury and associated property damage and destruction. In turn, these risks would represent a substantial threat to the health and safety of DAF firefighters and civilian FES personnel in communities surrounding DAF-managed lands. Additionally, adverse effects on health and human safety would likely occur if critical infrastructure, such as roads, bridges, powerlines, or medical or water treatment facilities, are damaged during future wildfires. Smoke from uncontrolled wildfires can have an adverse effect on the health of people in the vicinity, especially seniors, young children, and people with lung disease or other chronic respiratory conditions. It can also create hazardous conditions due to visibility impairment. Post-fire hazards may include flooding, erosion, and mudslides, which would likely adversely affect water supplies and water treatment facilities (**see Section 3.3.2**).

3.7 AIR QUALITY

3.7.1 Affected Environment

The affected environment for air quality is the ambient air quality within the air basins where Proposed Action activities at DAF installations would occur. The affected area would include the DAF installation project site where air pollutants would be likely to be generated and the surrounding areas.

Ambient air quality in a specified area or region is measured by the concentration of various pollutants in the atmosphere. The established numerical concentration-based standards known as the National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50), which were developed for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulates equal to or less than 10 microns in diameter [PM_{10}] and particulates equal to or less than 2.5 microns in diameter ($PM_{2.5}$), and lead (Pb). Pollutant concentrations in the air are affected by the amount of pollutants in the atmosphere and the extent to which these pollutants can be transported and diluted in the air. Therefore, ambient air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the ROI, and the meteorological conditions of the region.

Ambient air quality conditions where fuels treatment projects would occur would vary widely because of the diverse nature of the climate and topography at each DAF installation. The status of the ambient air within an airshed relating to the NAAQS would also vary and would be specific to the DAF installation. As such, the air quality attainment area designations and General Conformity thresholds would also be different at each project site.

3.7.1.1 Incorporated by Reference

Numerous studies have been conducted and reports written analyzing the effects of fuels management activities on air quality resources and are summarized below. **Appendix G – Table G-5** lists the studies incorporated into this PEA by reference.

NAAQS and Attainment Area Designations

Fuels reduction and management projects under the Proposed Action would be implemented in more than 78 individual counties located within various air quality control regions throughout the country. While many of the counties within the Proposed Action area are currently designated attainment for all of the criteria pollutants of concern (O_3, CO, NO_2, SO_2, Pb, PM_{10} and $PM_{2.5}$), some of the areas are in nonattainment or maintenance for O_3, PM_{10}, and $PM_{2.5.}$ Some installations, such as the UTTR, are spread over many different counties, each with its own attainment area designations for each criteria pollutant. Depending on the location and scope of the proposed action or project, the ROI for conducting an air quality analysis may need to include multiple counties.

Current air quality nonattainment or maintenance designations can be confirmed relatively easily using resources such as the Air Conformity Applicability Model, ACAM software, or by requesting the most recent nonattainment designations from the Air Force Civil Engineering Center, Compliance Technical Support Branch as indicated in its guide (AFCEC, 2019). If current attainment area designations change to nonattainment or maintenance, installations may need to evaluate project-specific activities for potential effects on air quality under the new designations.

General Conformity

For proposed projects that would take place in nonattainment and maintenance areas, USEPA requires additional evaluation under the CAA and General Conformity requirements (CAA Section 176(c)(1), and 40 CFR Part 93 Subpart B). If total direct and indirect emissions from a Federal Action can be shown to be below the *de minimis* levels of the rule [40 CFR § 93.153(b)], the action would be considered to conform with the State Implementation Plan (SIP) and would be exempt from performing a comprehensive air quality conformity analysis and determination. General Conformity *de minimis* thresholds (USEPA, 2020) are used in this PEA to indicate levels of emissions that would be considered to conform to the SIP.

Prescribed Fire Activities

Emissions from prescribed fires conducted in accordance with a smoke management program are "presumed to conform" with the CAA and SIP under 40 CFR § 93.153(i)(2), and a General Conformity would not apply, unless the project exceeds *de minimis* levels (refer to **Appendix G** for details).

Class I Areas

Class I designated areas include Wilderness Areas, National Wildlife Refuges, and National Parks; these areas include special protection for air quality. In such areas, it is common to see a white or brown haze that may affect the view. This haze is caused by man-made air pollution, often carried by the wind hundreds of miles from where it originated. Particulates such as sulfates, nitrates, organic carbon, elemental carbon, and crustal material are constituents of haze (USDA, 2023). Prescribed burning also contributes to the formation of sulfates, nitrates, and particulate carbon. Any significant deterioration of air quality is considered significant in Class I Areas. Class I Areas in and near DAF installations can be checked by referring to the USEPA's Regional Haze website https://www.epa.gov/visibility/list-areas-protected-regional-haze-program. Installations close to Class I Areas would consider any effects on Class I Areas in their smoke management plans and may need additional monitoring or other requirements to avoid potential adverse impacts.

Permitting

Large stationary sources that generate certain specified amounts (e.g., 100 tons per for some types of sources) of criteria air pollutants are issued an air operating permit (Title V permit or Synthetic Minor permit) by the state regulatory agency that is valid for 5 years from the date they are issued. The operating permits require an annual inventory of all significant stationary sources (such as boilers, generators, fuel storage) of air emissions for each criteria pollutant and are subject to monitoring and reporting requirements. Prescribed burning and other fuels reduction activities, which would be temporary, are typically not part of the Title V permitting but would need to obtain necessary permits and authorizations before a prescribed burn program can be implemented. If the prescribed burn is either not included in the installation's Title V coverage, or if the installation is not covered by a Title V permit, the installation would still need to comply with other applicable federal, state, and local air quality regulations. These regulations may include emission limits, smoke management guidelines, and requirements related to air quality impacts and public health.

Greenhouse Gases and Climate Considerations

For a fuels treatment project, the amount of greenhouse gases (GHGs) released would be difficult to quantify because it would depend on various factors, including the scale of the treatment, the specific methods employed, and the geographic setting. The primary GHGs of concern for fuels treatment are carbon dioxide (CO_2), methane, and nitrous oxide. All proposed fuels treatments would involve removal or alteration of biomass. For this reason, the GHG emissions estimations would also need to account for the amount and type of biomass removed, the decomposition rate of residual biomass, and the subsequent vegetation growth. Additionally, emissions would vary depending on the type of ecosystem, the composition of fuels, and the density of treated stands. Some fuel treatments may also lead to carbon sequestration benefits if they promote forest growth and increase carbon uptake over time.

The DAF guidance on applying and conducting a Social Cost of GHG Analysis is under development. Therefore, no Social Cost of GHG Analysis should be conducted for environmental assessments (EAs) and EISs that are currently ongoing. Per the CEQ interim guidance released January of 2023, "Agencies should exercise judgment when considering whether to apply this guidance to the extent practicable to an on-going NEPA process."

3.7.2 Environmental Consequences

A Proposed Action alterative would be considered to have a significant adverse impact on air quality if:

- It would result in a violation of NAAQS;

- It would exceed federal, state, or local regulatory emissions thresholds; or
- It would cause noncompliance with an installation's air operating permit.

In general, confirmation of any **one** of the above actions for the proposed project implementation would be considered a significant impact on air quality.

3.7.2.1 Proposed Action

The analysis of potential effects of the Proposed Action on Air Quality, as discussed, would not be valid if any activities taken to implement the fuels treatment plan would contribute to a change in the air quality compliance status in the region (e.g., from attainment to nonattainment), or would violate any conditions in the installation's air operating permit, would result in violating NAAQS, or would exceed state regulatory thresholds.

Approach and Methodology

Deviation from Standard Quantitative Method. Standard quantitative methods typically used for air quality impact analysis under NEPA would not be appropriate for this PEA because potential impacts of fuels treatments on air quality resources would vary significantly by region or location and is especially true for fires. Existing climate and air quality conditions, the size, timing, and duration of the activity, and the occurrence of other activities within the same airshed would also considerably affect air quality impacts. A reasonable estimation of criteria pollutant emissions from prescribed burning would require site-specific inputs for fuel (vegetation) type, and fuel loading, meteorology, and topography, all of which vastly varies across installations in the Proposed Action.

PEA Methodology

For this PEA, the air quality and visibility impact analysis includes various fuels treatments that would result in emissions of criteria air pollutants (and precursors). Sources of air pollutants would be from prescribed burning and from operating fuel burning equipment and vehicles used to transport materials and personnel.

The Proposed Action is assessed based on certain characteristics of the project instead of an estimated value. Conclusions on air quality impacts have been reached based on potential impacts in previous NEPA documents listed in **Appendix G – Table G-5**, engineering judgment, and other scientific articles or documents. Under NEPA (40 CFR § 1508.27), a determination of significance requires consideration of context and intensity. Accordingly, air quality impacts for this PEA are described qualitatively in terms of type (beneficial or adverse), degree, and duration (temporary or permanent), to the extent possible.

Each DAF installation would evaluate proposed fuels treatments for each individual project, based on predicted or estimated emissions, and other factors specific to the installation. As a conservative approach for air quality impact analysis under NEPA, emissions may be quantified and evaluated by comparing the direct or indirect emissions of the federal action with the applicability (*de minimis*) levels in the General Conformity rule.

Installations would determine whether the impact analysis included in this PEA would be sufficient or appropriate for the specific project. To make the PEA sufficiency determination, air quality impacts included in the PEA, along with other installation-specific aspects, would need to be carefully considered. Some installation-specific aspects to consider would include current attainment status in the area where proposed fuels treatments would take place, historical emissions from ongoing fuels reduction program, proximity to sensitive receptors, air quality trends from local air monitoring stations, applicable state, local air quality regulations, and application of best management practices. See **Appendix G – Table G-4** for details on the various site-specific aspects for consideration.

Overall Impacts

The Proposed Action would contribute to increased air pollution, primarily from prescribed fire operations, mechanical treatments, and targeted grazing.

Prescribed fire operations such as pile burning or understory burning would release air pollutants, such as CO, CO_2, and dust ($PM_{2.5}$). The exact quantity of each pollutant released depends on type of fuel, condition of the fuel, and burning method. Mechanical treatments and targeted grazing would involve use of vehicles and heavy-duty equipment that would release air pollutants such as CO, nitrogen oxides (NO_x), and sulfur oxides (SO_x), and ground disturbance that would result in fugitive dust (PM_{10} and $PM_{2.5}$).

Smoke would be generated from prescribed burning and may pose a nuisance to surrounding communities as well as to people traveling to the area. Potential adverse impacts from prescribed burning would be reduced by complying with existing burn permits, state and local air quality requirements, and smoke management programs to reduce potential smoke impacts. Typically, there would also be contingency plans to reduce smoke if the prescribed fire becomes a concern. Under these conditions, the chances of a damaging (affecting sensitive receptors) fire occurring would be low and overall impacts on regional air quality would be less adverse. Emissions from use of vehicles and equipment, and dust from on-site vehicles would be localized, temporary, and would disperse relatively quickly. Under such conditions, these emissions would not be likely to affect local or regional air quality conditions. Use of hand tools that are not powered by gasoline or diesel would have no impact on air quality.

Prescribed Burns

Potential air quality impacts within the area where the proposed project is to be implemented would primarily occur from (1) activities associated with pre-burn, burn, and post-burn phases, and (2) prescribed burning.

Direct emissions of particulate matter would occur from vehicles traveling on paved and unpaved roads during pre-burn, burn, and post-burn phases of the project. Vehicles that use diesel or gasoline, such as UTVs/ATVs, trucks, and fire engines would emit CO, NOx, and volatile organic compounds (VOCs) as products of combustion. Use of fuel burning mobile equipment (e.g., chippers, tractors, and bulldozers) would also generate products of combustion.

The type and amount of pollutants or smoke from prescribed burns would depend largely on the types and amount of fuel (vegetation) burned, its moisture content, and the temperature of combustion. Fuel type and quantity of fuel available would be specific to the treatment site and would greatly influence the amount (tons per year) of criteria emissions generated over the duration of the burn. To avoid smoke impacts, prescribed burns would be planned when atmospheric conditions will both vigorously lift emissions and direct them away from populated areas, and when the moisture in the fuels is just dry enough to consume the desired amount of fuel (usually 1-3 days after rain), but before the site is so dry that large amounts of forest floor material smolder for prolonged periods. Thus, carefully planned prescribed burns designed for optimal pollutant dispersal over a short duration would not be anticipated to result in significant amounts of air pollutants that would result in air quality violations.

State and local air quality regulatory authorities control air quality and smoke from burning. To comply with these regulations and to minimize potential adverse impacts, burning would be conducted by following a prescribed fire burn plan. The burning would then take place only within this prescribed plan to ensure a low risk and that objectives would be met. Prescribed fires conducted in accordance with USEPA-specific requirements [40 CFR § 93.153(i)(2)] are presumed to conform, and therefore are exempt from General Conformity Determination (AFCEC, 2019).

Plans to conduct prescribed burns at a DAF installation would require approvals from several organizations, including the base fire department and base security personnel, and would require installation-wide notifications. The burn plan would also require coordination with off-site groups, such as the National Weather Service, State Air Quality Departments, Department of Agriculture, and local police and fire departments. Before the burn would be implemented, the burn manager would prepare a prescribed burn plan that would include details about the fire (e.g., number of acres anticipated to burn, and what type of material or vegetation it would burn, moisture in the vegetation). The plan would also set the weather conditions under which the fire would burn (e.g., wind speed and direction) and possible scenarios that may require the planned fire event to be terminated. The Prescribed Fire Plan would be reviewed by National Park Service, USFS, and DAF installation managers to ensure that there is no adverse impact on Class I air quality areas, if relevant. To implement a burn safely, the manager would have detailed plans about fire initiation, smoke management, public notifications, required fire protective equipment, and provision for adequate firefighting resources in case of emergencies. It is also possible to conduct small fires before the larger area is ignited to verify how effectively vegetation (fuels) would be consumed to ensure burn and smoke management objectives would be met.

Implementation of prescribed burning has the potential to cause adverse air quality impacts. These impacts would be temporary, localized, and would last for the duration of the prescribed burn. Emissions from prescribed burning are not anticipated to cause an exceedance of the NAAQS, provided the state and regional smoke management guidelines are followed (BLM, 2020; DOI, 2012; FEMA, 2019; DAF, 2015; USDA, 2013; USDA, 2012). These emissions would be greater than under the No Action Alternative, as far more acres would be treated.

The best available measurements of fuel consumption and emission factors are used for smoke management in large fires (refer to **Appendix G** for prescribe burning emission factor resources), along with dispersion models that are used to estimate impacts downwind from a proposed burn. The model predicted air quality concentrations are then compared with air quality standards. A proposed burn is then either permitted or canceled. Therefore, the chances that a prescribed burn would violate the NAAQS is small.

Indirect air quality and smoke impacts are anticipated from a reduction in emissions from large-scale wildfire events, although their occurrence is not easily predictable. Emissions would be reduced because of reduced fuel loading in areas where the PEA has been implemented. In the long term, direct, and indirect impacts on air quality would likely improve to some extent with the Proposed Action.

<u>Mechanical Treatment</u>

Mechanical treatments under the Proposed Action would result in emissions of criteria pollutants primarily from the following sources:

- Combustion exhaust generated by operating heavy-duty off-road vehicles, mechanized equipment, and an on-site incinerator;
- Combustion exhaust resulting from on-road vehicle use for personnel commutes, transport of equipment, and hauling of cut branches and removed vegetation to local landfills;
- Fugitive dust emissions caused by ground disturbance activities and vehicle travel on unpaved roads; and
- Smoke generated by combustion of vegetation during open burning or burn piles.

Mechanical treatment that involves combustion of fuels would generate criteria air pollutants, such as NO_x, CO, SO_x, and VOCs. Use of equipment and vehicles would result mainly in PM_{10} and $PM_{2.5}$ fugitive dust emissions caused by disturbance of dirt during movement. Use of standard dust control practices during vehicular and equipment use (such as water and idling of engines) would reduce the amount of particulate emissions from becoming airborne. The exact level of pollutant emissions would depend on the type of equipment and vehicles used for each treatment, the number of hours operated, and the number of workers and their commute miles. For example, a crew comprising of a maximum of 10 to 12 workers would reasonably be able to carry out mechanical treatments on approximately 5 to 10 acres per day. Potential adverse impacts for both fuel combustion and fugitive dust emissions would be localized, temporary, and short-term in duration and would not result in an exceedance in NAAQS (BLM, 2020; DHS, 2021; DOI, 2012).

Criteria pollutant emissions (smoke emissions) would result from disposal of removed fuels or vegetation from pile (open) burning during mechanical treatment projects. These projects would be conducted in conformance with relevant state and local air quality laws and permitting requirements for open burning. Best management practices, as applicable, would be followed when conducting open burns. The quantity of emissions would depend on the location of the project, the amount (acres) of vegetation burned, and the number of workers involved. Emissions from pile burning are not anticipated to cause an exceedance of the NAAQS, provided that state and regional smoke management guidelines are followed. Smoke impacts can be limited by following proper firing techniques and by managing the timing of the pile burn effectively (FEMA, 2019; FEMA, 2020).

<u>Hand Treatment</u>

Use of hand tools that are not powered by gasoline or diesel would have no impact on air quality. It would be reasonable to assume one hand crew of up to 10 to 12 workers would conduct hand treatments and can typically treat approximately 1 acre per day, depending on existing vegetation, terrain, and other factors. No additional impacts would occur, other than those discussed under mechanical treatments (combustion exhaust, dust, and smoke).

Herbicide Application

Air emissions would result from travel on paved and unpaved roads to and from the treatment site. Travel would generate small amounts of dust (particulate matter), and equipment and vehicles would emit particulate matter, ozone precursors (NO_x and VOCs), and other products of combustion. Levels of travel and associated emissions would be less than significant and within the normal range of use of roads for other travel.

DAF-approved herbicides have been assessed and registered by the USEPA. There would be minimal to no volatilization of chemicals in the herbicides during and after treatment; therefore, these treatments would not affect air quality through release of VOCs. Incorporation of standard best practices would ensure that herbicide vapor or overspray would be prevented from becoming airborne.

Targeted or Prescribed Grazing

For targeted grazing, livestock and equipment would need to be transported to and from the treatment site. In addition, there may be construction-type activities related to installation of temporary fencing. Travel on paved and unpaved roads would produce dust (particulate matter), and equipment and vehicles would emit mostly CO, and ozone precursors (NO_x and VOC), and other products of combustion. Although livestock do emit methane, due to the small scale of any targeted grazing operations, this method would have less than significant impacts on air quality.

Potential GHG Emissions as a Result of Fuel Reduction Activities and Climate Considerations

The Proposed Action would generate GHG emissions from prescribed burning and operation of vehicles and heavy-duty equipment. Estimated maximum greenhouse gas emissions would occur when prescribed burning, mechanical treatments, and targeted grazing would occur simultaneously during one combined treatment event.

The goal of proposed fuels treatments is typically to decrease the occurrence of high-severity wildfires and increase the potential rates of carbon sequestration. Studies that have been conducted to understand the impact of both fire and mechanical fuel treatments on carbon show that, while treatments may result in a short-term release of carbon, substantial carbon sequestration benefits occur following treatments because of long-term storage in forest products (Stephens et al., 2009), reduced wildfire emissions (Stephens et al., 2012a; Stephens et al., 2012b), and increased growth of residual trees (Collins et al., 2014). Other studies have also observed that a clear benefit of fuel treatments including prescribed fire, is the potential to improve long-term carbon sequestration (Flanagan et al., 2019, Wiedinmyer and Hurteau, 2010). However, there is uncertainty in predicting future wildfire occurrence, related emissions, and carbon sequestration rates, which are highly variable and depend on many factors. Future wildfire intensities and carbon sequestration in treated areas are the subjects of continued scientific research and debate. However, it is anticipated that the Proposed Action, would have the potential to improve long-term carbon sequestration. No Action Alternative

Under the No Action Alternative, there would be no change in air quality from current conditions. No large-scale treatment of fuels would occur in the proposed project areas at DAF installations; therefore, no additional emissions would be generated and no potential adverse impacts to air quality would occur. However, the No Action Alternative is associated with an increased risk of wildfires. The chance of wildfire increases as more buildup of fuels occurs, and these fuels are being increasingly built up as global temperatures are also on the rise. Studies show that smoke emissions and associated impacts from prescribed fires would be at a smaller scale as compared with those from wildfires (USEPA, 2021; Liu, 2017; OSU, 2018). In the absence of fuels treatments, a high severity wildland fire that has the potential to release large amounts of pollutants could occur. This would cause short-term adverse air quality impacts from smoke emissions.

3.8 NOISE

3.8.1 Affected Environment

The affected environment for noise includes all DAF-managed lands where the proposed fuels treatments would occur, as well as lands immediately adjacent to an installation boundary that may potentially be affected by the sound of prescribed burns, mechanical/hand removal techniques, UTVs/ATVs, or heavy equipment operation.

Aircraft operations are the predominant source of noise at and around DAF installations. Aircraft noise includes noise generated by varying sizes and configurations of jet-powered aircraft, propeller-driven planes, and helicopters during all aspects of their operations, including takeoffs, landings, taxiing, and hovering. Stationary engine testing during aircraft maintenance further contributes to the noise environment on DAF installations. Other sources of noise on DAF installations includes general motor vehicle traffic, aircraft ground-support equipment, and maintenance and industrial processes that support aircraft operations and general installation activities.

3.8.2 Environmental Consequences

Evaluation Criteria

Noise-related impacts would be considered significant if the Proposed Action generated noise levels that were incompatible with surrounding land uses or created a situation that endangered human health and safety. A potential adverse effect would be significant if noise generated by the Proposed Action impeded or prevented continuation of human activities on adjacent or nearby on-base or off-base lands.

Each installation would evaluate noise-generating fuels treatment in the environmental project planning review process on a case-by-case basis. Potential noise impacts to wildlife are discussed in **Section 3.2.2**.

3.8.2.1 Proposed Action

Vehicles, tools, equipment, and increased human presence and activities associated with each fuels treatment would contribute to increased noise levels in the ambient environment during the Proposed Action. Mechanical treatments, which would involve use of heavy equipment, would likely have the most potential to contribute to increased noise levels. Prescribed burns, which would involve localized increases in human presence and activity, would also contribute to increased noise levels, though to a substantially lesser extent that mechanical treatments. Noise increases associated with hand treatments, chemical treatments, and targeted grazing would be barely perceptible to people outside the areas where these treatments would occur.

The duration and intensity of noise increases during proposed fuels treatments would vary, depending on the number of workers involved in each treatment; the number and types of vehicles, equipment, and tools being used; surrounding topography and vegetation; weather conditions; distance to nearby listeners; and other factors. Generally, most noise increases would be highly localized and of relatively short duration and would primarily be confined to targeted treatment areas and on-base or off-base lands immediately bordering those areas. In most instances, noise generated during the proposed fuels treatments would be attenuated by distance and environmental features between the targeted treatment areas and the nearest listeners. The majority of fuels treatments would be performed during daytime working hours (7:00 a.m. to 5:00 p.m. local time), further minimizing potential adverse effects on nearby listeners. Throughout the Proposed Action, aircraft operations would continue to be the predominant source of noise on DAF-managed lands; in this context, noise associated with the Proposed Action would be minor by comparison. Therefore, the Proposed Action would have no or less than significant temporary adverse effects from noise; these effects would not be significant.

Workers involved in the proposed fuels treatments would wear appropriate hearing protection and adhere to applicable procedures to prevent or minimize hearing loss, based on the types of treatments being conducted. The distance between noise-generating equipment and potential listeners outside targeted treatment areas would be sufficient to attenuate noise to levels that would not contribute to hearing damage or loss. Therefore, noise from the Proposed Action would have no or less than significant effects on human health and safety; these effects would not be significant.

After each proposed treatment activity had been completed, noise conditions on DAF-managed lands would be similar to those that existed prior to the Proposed Action. The Proposed Action would not create new, permanent sources of noise on any DAF installation. Therefore, the Proposed Action would have no long-term adverse effects from noise.

3.8.2.2 No Action Alternative

Under the No Action Alternative, noise levels would not deviate from existing conditions, primarily composed of noise generated from routine installation activities including aircraft operations. However, in the absence of fuels treatments, an uncontrolled wildfire would be more likely to occur, which is likely to result in higher noise levels as a result of firefighting efforts compared with the Proposed Action.

3.9 INFRASTRUCTURE

3.9.1 Affected Environment

A variety of infrastructure, described in **Appendix D – Section D.8.1**, is located on and near DAF-managed lands where the Proposed Action would be implemented. This infrastructure includes roads, runways and aircraft navigation systems, as well as aboveground and underground electrical, phone/data, and water/sewer lines. Typically, locations of aboveground facilities are obvious or readily identifiable through visual observation, although some facilities (e.g., pumping stations and electrical substations) may be screened from view by fences, walls, or vegetation. The locations of underground systems must be verified through comparison of as-built drawings or other documentation with field delineation using electromagnetic utility locating equipment or similar electronic or mechanical identification methods.

The specific types and locations of infrastructure on and near DAF installations that would potentially be affected by the Proposed Action are too numerous to identify at the programmatic level. Site-specific identification and review of existing and planned infrastructure may be required at each DAF installation or property before treatments included in the Proposed Action would be implemented.

3.9.2 Environmental Consequences

Impacts on infrastructure would be considered significant if implementation of an alternative resulted in one or more of the following:

- Complete destruction of or damage to existing infrastructure that requires reconstruction of the facility or system to function at its previous level of service.
- Destruction or damage to existing infrastructure that prevents delivery of service or use of the system for more than 24 hours.
- Damage to or alteration of an area such that previously planned infrastructure can no longer be built or operated in that area and must be re-sited.
- Long-term risk of destruction of or damage to infrastructure from uncontrolled wildfires that is not managed and minimized through continued treatment of fuels.

3.9.2.1 Proposed Action

For the reasons discussed below, it would be anticipated that the Proposed Action would have no or less than significant short-term impacts on infrastructure. Conversely, it would involve long-term beneficial effects from reduction of fuels that increase the potential for ignition of uncontrolled wildfires and potentially result in substantial damage or destruction of infrastructure. Before the Proposed Action would be implemented at each DAF installation, DAF personnel would perform site-specific reviews to identify existing and planned infrastructure in and near areas proposed for treatment that would potentially be affected by selected treatments. If the site-specific review concludes that the severity, extent, or duration of potential short-term or long-term adverse effects on infrastructure would exceed the effects described here, or is not addressed in this document, additional analysis and planning would be needed to modify the proposed fuels treatments to prevent or minimize potential adverse effects to the extent practicable and ensure that the Proposed Action would have no, or less than significant, adverse effects on infrastructure.

Effects and activities associated with prescribed burns (e.g., flames, smoke, and ash) and mechanical treatments (e.g., excavation or other ground disturbance) would have the highest potential to impact existing infrastructure or render sites planned for future infrastructure unusable. Hand treatments, chemical treatments, and targeted grazing would not involve excavation or other activities that would potentially impact infrastructure and would generally be of low intensity and occur in areas that would be relatively small and discrete in scale. Effects from these methods would primarily be confined to the treatment area and its immediate vicinity. Therefore, these methods would have no, or less than significant, potential to affect existing and planned infrastructure.

The proposed fuels treatments would be planned and executed in accordance with applicable procedures and regulatory requirements described in **Section 2.1** to prevent damage to or destruction of existing infrastructure. Existing aboveground and underground utility systems would be delineated in advance and avoided during implementation of the treatments. The treatments would also avoid alteration of or damage to areas identified for planned infrastructure that may render construction and operation of the planned infrastructure infeasible. DAF personnel would coordinate with civilian utility system operators as needed to temporarily re-route existing utility services during the treatment if there is a reasonably foreseeable possibility that the treatments would likely temporarily disrupt or halt operation of the utility service. Advance coordination and planned re-routings of utility services, if required, would ensure that temporary interruptions of those services would be prevented or minimized to the extent practicable.

The treatments implemented at each DAF installation would be planned and executed in a manner that would avoid or minimize disruption of DAF and civilian airfield operations as well as military and civilian aviation traffic. Smoke and ash generated from prescribed burns would have the greatest potential to affect military and civilian aviation traffic; as such, these treatments would be planned and executed in strict compliance with the procedures and requirements described in **Section 2.1**, with particular attention to existing and forecasted weather conditions that would influence the density and dispersion of airborne smoke and ash. Air traffic controllers would be notified well in advance of planned prescribed burns and aircraft would be re-routed during implementation of this treatment to avoid smoke and ash that would likely disrupt navigation and operation. Adherence to these requirements would ensure that potential short-term impacts on aircraft and airfield operations from the Proposed Action would be avoided.

To prevent or minimize safety risks to military and civilian motorists, some proposed fuels treatments — particularly prescribed burning and. to a lesser extent, mechanical treatments — could necessitate temporary closures or detours of on-base roads and adjacent or nearby off-base roads. Such closures or detours would be minimized to the extent practicable based on the anticipated duration and severity of the potential safety risk. Any required off-base road closures would be coordinated well in advance with civilian road management authorities and emergency/first responder services. In addition, notifications of the planned road closures would be distributed to local communities via printed and electronic media. After the treatment is complete, temporarily closed or detoured roads would return to normal operation.

After each treatment has been completed, associated effects on infrastructure would cease and activities and operations on and near each DAF installation would continue as they did prior to the treatment. In the long term, the reduction of invasive, overgrown, and undesirable vegetation would substantially minimize the potential for uncontrolled wildfires with the potential to inflict substantial damage and destruction on DoD and civilian infrastructure. Therefore, potential short-term adverse effects on infrastructure would be less than significant, and long-term effects would be beneficial. Short-term and long-term potential effects on infrastructure from the Proposed Action would not be significant.

3.9.2.2 No Action Alternative

Fuels that would remain untreated under the No Action Alternative would continue to pose a risk of ignition of uncontrolled wildfires with the potential to damage or destroy critical infrastructure serving DAF installations and surrounding communities. While the risk posed by untreated fuels would represent a long-term potential adverse impact, those fuels and potential wildfire risks would continue to be managed as they currently are, thereby minimizing the potential for significant impacts. Therefore, potential long-term adverse effects on infrastructure from the No Action Alternative would not be significant.

3.10 Environmental Justice

3.10.1 Affected Environment

Environmental justice populations that would potentially be affected by the Proposed Action include members of any of the following demographic and socioeconomic groups who live or work in areas adjacent to or near DAF-managed lands where the Proposed Action would be implemented (DAF, 2020b):

- Persons identifying as a member of one or more of the following minority groups:
  - Black or African American
  - American Indian or Alaska Native
  - Asian
  - Native Hawaiian and Other Pacific Islanders
  - Hispanic or Latino[1]
  - Some Other Race
- Low-Income Populations – individuals or families whose total income is less than the corresponding poverty threshold established annually by the US Census Bureau;
- Children – people 17 years of age or younger;
- Elderly – people 65 years of age or older;
- Populations that principally subsist on fish and wildlife; and,
- Sensitive receptors – locations where concentrations of children or the elderly may be present (e.g., schools, daycare centers, hospitals, or retirement communities).

Other groups, such as persons with limited English proficiency, may also be included for environmental justice analysis based on consideration of local demographic and socioeconomic conditions adjacent to DAF-managed lands where the Proposed Action would be implemented.

Environmental justice populations are likely to be present in nearly every community or local jurisdiction in the United States. These populations cannot be identified through visual observation or anecdotal information; rather, they must be identified through review and analysis of demographic and socioeconomic data available from the US Census Bureau, other federal, state, and local agencies, and other reputable organizations. In addition to historical or structural socioeconomic disadvantages, environmental justice populations often experience chronic health conditions, such as diabetes, high blood pressure, and asthma at higher rates than non-environmental justice populations. Such chronic conditions can be worsened through exposure to elevated levels of smoke, fugitive dust, and particulate matter, criteria pollutants, hazardous and toxic materials and waste, or other stressors. The analysis of potential effects on environmental justice populations should consider the potential for short-term and long-term exposure to such stressors.

1 Persons of Hispanic / Latino origin can be of any race.

Given the wide geographic distribution of DAF-managed lands throughout the United States, it is not possible at this programmatic level to identify specific environmental justice populations that would potentially be affected by the Proposed Action. Therefore, before the Proposed Action would be implemented at a particular installation, the DAF (primarily consisting of AFWFB and installation-level personnel) would consider the potential effects on local populations that would likely result from each fuels treatment, using the effects described in **Section 3.11.2** of this document as a baseline. If the DAF concludes that anticipated effects on individuals or communities resulting from a fuels treatment has the potential to exceed the effects described in this document, a location-specific environmental justice analysis would be performed in accordance with DAF and other applicable and comparable guidance. The location-specific environmental justice analysis generally follows the following steps outlined in the DAF *Guide for Environmental Justice (EJ) Analysis Under the Environmental Impact Analysis Process* (DAF, 2020b):

1. Public Outreach / Involvement – Identify and include environmental justice populations and communities early in the planning process.
2. Identify Potential Adverse Environmental Impacts – Prior to environmental justice analysis, identify potential environmental impacts resulting from implementation of the Proposed Action.
3. Identify ROI – Identify geographic areas where the Proposed Action would result in changes to baseline conditions that would impact human populations. The human populations living in this area constitutes the ROI.
4. Data Collection for ROI – Collect best available census data for minority and low-income human populations within the ROI to quantitatively characterize demographic composition.
5. Documentation of Baseline Conditions in ROI – Include a table containing baseline conditions in the ROI in the Affected Environment Section of the NEPA document.
6. Community of Comparison (COC) Data Collection – Identify and collect best available census data to serve as the COC to establish comparison thresholds.
7. Compare ROI and COC – Calculate and compare demographic percentages in the ROI to the COC.
8. Declaration of Findings – Declare whether there would be disproportionate impacts to environmental justice populations as a result of the Proposed Action and recommend mitigation, if applicable.

If this analysis determines that environmental justice populations would potentially be affected, the DAF would prepare additional documentation to identify those populations, potential effects, and measures that would be implemented to ensure that those effects would not be disproportionately high and adverse. The DAF would also conduct additional public outreach to inform environmental justice populations about the Proposed Action, invite them to participate in the planning process, and give them opportunities to provide meaningful input.

3.10.2 Environmental Consequences

Adverse effects on environmental justice populations would be disproportionately high and adverse, and therefore significant, if the Proposed Action resulted in one or more of the following:

- Human death or permanently debilitating injury;
- Temporary displacement from housing or employment/income, without fair compensation, for more than 12 hours;
- Permanent displacement from or destruction of a residence or business without fair compensation or replacement;
- Exposure to hazardous and toxic substances that exceeds applicable state or federal regulatory standards;
- Permanent alteration or destruction of, or permanent loss of access to, a building, structure, property, or site having a documented historical, cultural, or religious significance;
- Permanent loss of access to quantities of firewood, vegetation, and/or fish and wildlife that are sufficient to support subsistence populations; or,
- Permanent destruction or alteration of an indoor or outdoor location such that religious or cultural practices previously occurring at that location can no longer be performed or conducted.

3.10.2.1 Proposed Action

Direct physical effects (those resulting in disturbance, alteration, or changes to the physical environment) from fuels treatments included in the Proposed Action would primarily be limited to removal of vegetation and associated soil disturbance during vegetation removal. The proposed fuels treatments would be carefully planned and executed in accordance with all applicable procedures and regulatory requirements (see **Section 2.5**). Furthermore, all associated direct physical effects would be contained entirely within the targeted treatment areas. (Effects from smoke, ash, and particulate matter are further discussed below.) The treatment areas would be located on DAF-managed lands at appropriate distances from nearby human populations and existing development whenever feasible, based on the type of treatment being conducted. Strict adherence to all applicable procedures and regulatory requirements would ensure that the Proposed Action would have no potential to result in inadvertent human death or physical injury, or inadvertent damage to or destruction of adjacent or nearby buildings, structures, and other physical property. Therefore, the Proposed Action would have no direct adverse effects on environmental justice populations.

Fuels treatments included in the Proposed Action would require the temporary closure of some DAF-managed lands used by subsistence populations for hunting, fishing, and foraging. The proposed fuels treatments would also remove vegetation and disturb, displace, or inadvertently destroy game animals and fish relied on as food sources. (Direct and indirect effects on biological resources are discussed in **Section 3.2.2.**) Although these direct effects would temporarily be potentially adverse, the DAF would ensure during the treatment planning phase that other lands remain available for these activities. Access to treated lands would ultimately be made available to subsistence populations after treatment and any applicable waiting period have been completed. Direct effects on plants and animals would occur at the individual rather than population or species level and would not impede or prevent the continued propagation of any species. In the long term, the proposed fuels treatments would have beneficial effects on plants and animals by encouraging the growth of native species that provide desirable habitat (see **Section 3.2.2**). Therefore, the

Proposed Action would have potential short-term, less than significant, direct adverse effects on subsistence populations, and long-term beneficial effects.

Indirect effects from the Proposed Action would likely include, but would not be limited to, some or all of the following:

- Smoke, ash, and particulate matter from prescribed burns;
- Erosion and runoff of soils disturbed during mechanical treatments;
- Emissions of criterial pollutants from vehicles and heavy equipment used during mechanical treatments;
- The inadvertent runoff of herbicides from chemical treatments; and,
- Elevated noise levels associated with increased human presence and activity associated with all proposed fuels treatments.

These and other comparable indirect effects would be prevented or minimized to the extent practicable through careful planning and execution of proposed fuels treatments as well as adherence to applicable procedures and regulatory requirements (see **Section 2.5**). The distance between targeted treatment areas and nearby human populations — in combination with remaining undisturbed vegetation, surrounding topography and development, weather conditions, and other localized factors — would also help to diminish, disperse, or attenuate these effects to levels that would be imperceptible or minimally perceptible to nearby human populations. Although some perceptible indirect effects (e.g., smoke and ash from prescribed burns [see **Section 3.7,** Air Quality] and increased noise levels associated with all proposed fuels treatments) would potentially cause general annoyance in human populations, they would not be of a severity or intensity that would impede or prevent daily activities and functions, require temporary relocation or displacement, induce new or worsen existing health conditions, or otherwise cause a substantial degradation in quality of life. After the proposed fuels treatments are complete, associated indirect effects would cease and conditions in and near the treatment area would be similar to those that existed prior to treatment; as such, indirect effects would be temporary.

Potential indirect adverse effects from the Proposed Action would not be more likely to affect environmental justice populations relative to non-environmental justice populations, nor would the duration, severity, and intensity of such effects exceed or be greater than those experienced by non-environmental justice populations. The Proposed Action would have no, or less than significant, adverse effects on environmental justice populations. Therefore, there would be no potential disproportionately high or significant adverse impacts on environmental justice populations.

Smoke, noise, or other indirect effects from the Proposed Action described above would likely contribute to displacement of game animals on adjacent off-base lands during fuels treatments. However, such displacements would be temporary, and game populations on adjacent lands would be expected to remain sufficient to meet the needs of nearby subsistence populations. Temporarily displaced game animals would ultimately return to these areas and would continue to propagate; no potential adverse effects would occur at the population or species level. Therefore, the Proposed Action would have no indirect adverse effects on subsistence populations that rely on game animals as a food source.

As discussed in **Appendix D – Section D.9.2**, DAF personnel would conduct additional location-specific environmental justice analysis before selected treatments would be implemented at a particular installation if it's determined that effects on human populations would likely exceed those described in this PEA.

3.10.2.2 No Action Alternative

Fuels that would remain untreated would continue to pose a risk of ignition of uncontrolled wildfires with the potential to result in human death or injury, property damage and destruction, loss of employment or income, and damage to or destruction of properties and sites with historic, cultural, or religious significance, both on and adjacent to DAF-managed lands. The severity of such effects is often borne or experienced by environmental justice populations to a greater extent or degree relative to non-environmental justice populations.

CHAPTER 4 CUMULATIVE EFFECTS

Cumulative impacts can result from individually insignificant but collectively significant actions taking place over a period of time (40 CFR § 1508.7). CEQ regulations require that cumulative impacts be evaluated along with the direct and indirect effects of each alternative (40 CFR § 1508.7).

Cumulative impacts are defined as impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes the other actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to a proposed action would be expected to have more potential for a relationship than those more geographically separated.

Programmatic-level Effects

This programmatic level of cumulative effects analysis focuses on program-wide effects, specifically how the effects of implementing numerous ongoing fuels treatments on DAF-managed lands may combine. Fuels treatments that occur in a similar location, such as the same installation, or on a nearby ancillary facility, during a similar time period, are more likely to cause cumulative effects compared with fuels treatments on geographically separated lands or treatments spread out over time. Both adverse and beneficial effects can accumulate for example, insignificant noise impacts from numerous small mechanical treatments conducted simultaneously may combine to increase the noise level to, or past, the threshold of significance. Fuels treatments occurring in the same or adjacent sites where fire suppression has degraded the ecosystem would be expected to result in a cumulative beneficial impact on biological resources. The effects would combine to increase the degree of beneficial effects on ecosystem resilience. Cumulative adverse impacts to biological resources from numerous or repetitive fuels treatments at or near the same area on an installation within a short period of time would be avoided by coordination with installation Natural Resource Managers.

Installation-level Effects

As part of the fuels treatment planning process, the installation would review the PEA, along with other relevant NEPA and environmental documents to determine whether the Proposed Action may result in significant impacts on a resource. This review would include consideration of the potential for cumulative impacts that may exceed those described in this PEA, especially location-specific impacts that cannot be analyzed at the programmatic level. The following information is provided to assist installations in this review.

The effects of past and current actions on DAF-managed lands are described in the Affected Environment sections as the current (baseline) condition of resources. Reasonably foreseeable future actions on DAF-managed lands with the potential to affect the same resources (vegetation, wildlife, water resources, earth resources, air quality, noise, infrastructure, and environmental justice) may be described in installation INRMPs and Installation Development Plans, as well as other installation-specific documents.

There is the potential for beneficial cumulative impacts if the fuels treatment overlaps in time or occurs in proximity to other fuels treatment projects. These beneficial effects may occur by reducing risk of wildfire or by preventing the spread of a high-intensity wildfire. Fuels treatments have the potential to cumulatively benefit water resources, vegetation, aquatic, and terrestrial wildlife habitat through the cumulative reduction in erosion and sedimentation and the reestablishment of vegetation in multiple project areas within the same watershed.

Ongoing or reasonably foreseeable fuels management activities conducted by federal agencies have the potential to affect land adjacent to DAF-managed lands. For example, Nellis AFB is surrounded by land managed by the Bureau of Land Management (BLM) and National Park Service, and Mountain Home AFB, the UTTR, and the NTTR are all surrounded by large areas of BLM land. The BLM is currently implementing fuels reduction and rangeland restoration projects in the Great Basin (BLM, 2020). These, or similar, projects should be considered as a source of cumulative effects.

National wildfire initiatives suggest that an increasing amount of fuels management on federal lands is reasonably foreseeable. The National Cohesive Wildland Fire Management Strategy (DOI, 2014) articulates the shared goals of (1) restoring fire-adapted ecosystems on a landscape scale; (2) building fire-adapted human communities; and (3) responding safely and effectively to wildland fire. The Office of Wildland Fire at DOI supports a Fuels Management Program that treated 1.8 million acres in 2021 and has a $1.77 billion budget for 2023. The Bipartisan Infrastructure Law and Inflation Reduction Act include investments for fuels management and post-wildfire restoration across federal and Tribal nation lands. In January 2022, the US Forest Service announced a 10-year initiative called, “Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America’s Forests,” with a budget of $2.42 billion for fuels-related projects through 2026.

Fuels reduction activities on adjacent federal lands that may occur at the same time would potentially contribute to effects on resources located on the DAF-managed lands to increase the potential for adverse effects. These effects would likely include such things as reductions in air quality from smoke created by simultaneous prescribed fires and cumulative loss of wildlife habitat. Wildlife displaced from DAF-managed lands may take refuge on adjacent federal lands, so if these lands are, or have recently been, affected by fuels treatments, the potential adverse impact would be increased. The potential for these effects, and the degree of impacts, would be evaluated during site-specific analyses.

Through this PEA, the DAF evaluates the potential environmental consequences of implementing the proposed fuels treatments (described in **Chapter 2**) on DAF-managed lands. The qualitative analysis in this PEA for fuels reduction and management indicates no significant impact to any resource area. Because the Proposed Action would be implemented as individual projects at installations throughout the United States, the geographic and temporal boundaries for analysis of cumulative effects would be installation specific. Should installations need to conduct additional NEPA analysis for implementation of fuels treatments proposed in this PEA, installations would consider only those resources that have the potential to be affected by incremental effects of proposed activities in combination with past, present, and reasonably foreseeable future activities relative to their location and include cumulative analysis in tiered NEPA, as applicable.

Additional NEPA documentation would be completed for any project that is anticipated to result in impacts that cannot be addressed by the BMPs discussed in **Section 2.5**. **Chapter 5** provides specific thresholds for determining whether a project may be covered under this PEA or would require additional NEPA documentation.

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CHAPTER 5 TIERED NEPA

This PEA has been prepared to assess potential environmental impacts from the proposed suite of fuels treatments described in **Chapter 2** at the programmatic level of analysis. CEQ regulations at 40 CFR § 1501.11 allow for analysis of program-level actions in NEPA documents and tiering from those programmatic documents, if needed, to eliminate lengthy or repetitive discussions. In turn, tiered NEPA documents allow for focused reviews that are narrower in scope and specific to resources, conditions, and potential effects at the local or site level.

A **PEA** is used to address a group or suite of proposed projects, actions, initiatives, or activities that are similar in scope, scale, magnitude, and nature of potential impacts.

Before a fuels treatment would be implemented on DAF-managed property, a site-specific analysis would be prepared to consider local conditions and potential effects on locally important or sensitive resources as part of the project planning process, which includes preparation of Air Force Form 813, *Request for Environmental Impact Analysis*. These site-specific analyses would typically be prepared by DAF installation-level Natural Resource Managers in coordination with the AFWFB, installation leadership and legal counsel, installation fire and emergency services personnel, other personnel or individuals with technical or localized expertise and knowledge, and other internal DAF stakeholders, as applicable.

The analysis would include the review of this PEA, along with other relevant NEPA and environmental documents. If the analysis concludes that the Proposed Action may result in significant impacts on a resource, or that the intensity, severity, or duration of potential adverse effects from the Proposed Action may exceed those described in this PEA, the DAF would prepare supplemental NEPA documentation, such as a Categorical Exclusion, or an EA, tiered from this PEA to assess those location-specific effects. Additional coordination would also be conducted during the supplemental NEPA process with applicable federal, state, and local agencies; Native American tribes with historic, cultural, or religious ties to lands proposed for treatment; potentially affected environmental justice communities; and other relevant stakeholders to inform them about the Proposed Action and solicit their input and involvement during the NEPA process. The Proposed Action would not be implemented until BMPs or mitigation measures to prevent or minimize potential adverse impacts have been identified, all required consultations completed, and a signed FONSI is issued by the DAF and any cooperating agencies.

Table 5-1 summarizes potential impacts that are sufficiently addressed by this PEA and would not require, in most cases, preparation of tiered NEPA documentation, as well as thresholds or triggers that could indicate preparation of a tiered NEPA analysis may be needed. **Appendix D** expands further on the thresholds or triggers for each resource evaluated in this PEA that determine if tiered NEPA documentation is needed. **Figure 5-1** shows the steps for installation- or site-level personnel to take to help determine if a tiered NEPA analysis is needed.

Although an effort has been made to capture as many potential thresholds as possible, those listed in **Table 5-1** and described in **Appendix D** are not comprehensive; instead, installation-level personnel are encouraged to use this information as a guide and exercise their discretion regarding the need to prepare tiered NEPA documentation based on their local knowledge, experience, and coordination with the AFWFB, installation leadership and legal counsel, fire and emergency services personnel, and other personnel or individuals with local or technical knowledge or expertise. Installations would be required to evaluate the potential environmental impacts to all resources from implementation of the Proposed Action and to identify and determine the level of consultation, mitigation, and permitting requirements needed when conducting installation-specific tiered NEPA analysis.

In addition to impact-related triggers, use of equipment or methods of fuels treatments not described in **Chapter 2**, would also trigger the need for additional NEPA analysis.

Table 5-1 Thresholds for Preparing Tiered or Supplemental NEPA Analysis and Documentation

PEA Resource	Effects Covered by this PEA	Threshold / Trigger for Preparation of Supplemental NEPA Analysis / Documentation
Biological Resources	• Less than significant potential adverse effects on common species of vegetation, wildlife, or habitat; potential adverse effects would include disturbance or annoyance from the proposed fuels treatments, temporary displacement during fuels treatments, or inadvertent injury or destruction of individual low numbers of plants and animals; temporarily displaced animals would eventually return to the affected area and adverse effects would not impede or prevent continued propagation of plants and wildlife at the population or species level. • No effect or not likely to adversely affect federally and state-listed candidate, threatened, and endangered species or critical habitat, as determined through informal consultation between the DAF and USFWS or NMFS. • No effects on birds protected under the MBTA and BGEPA.	• Potential significant adverse effects on common species of vegetation, wildlife, or habitat that cannot be reduced to less than significant through application of BMPs or mitigation measures. • Potential adverse effects on species with state or federal legal protection such as those listed as threatened or endangered under the ESA; formal consultation between the DAF and USFWS and/or NMFS is required. • Potential adverse effects on habitats designated as critical habitat under the ESA; formal consultation between the DAF and USFWS or NMFS is required. • Potential adverse effects on birds protected under the MBTA and BGEPA.
Water Resources	• Less than significant short-term potential adverse effects on surface water bodies, groundwater, floodplains, and wetlands. Potential adverse effects would be minimized to the extent practicable through adherence to applicable regulatory and permitting requirements and application of appropriate BMPs. • Temporary, localized increases in turbidity or degradation of water quality from runoff that would not exceed applicable water quality criteria.	• Potentially significant adverse effects on surface water bodies, groundwater, floodplains, and wetlands that cannot be minimized through application of appropriate BMPs or mitigation measures. • Runoff of sediments or pollutants that could result in exceedances of applicable water quality criteria. • Potential wetland impacts that require coverage under an Individual Permit issued by USACE.

Table 5-1 Thresholds for Preparing Tiered or Supplemental NEPA Analysis and Documentation (continued)

PEA Resource	Effects Covered by this PEA	Threshold / Trigger for Preparation of Supplemental NEPA Analysis / Documentation
Water Resources *(continued)*	• Potential temporary impacts on wetlands that are covered under an applicable Nationwide Permit issued by USACE. Temporary wetland impacts would not permanently alter the functions and values of wetlands. The DAF would issue a site-specific FONPA in accordance with EO 11990, Protection of Wetlands and the Air Force EIAP (32 CFR Part 989) for proposed activities that would temporarily occur in and affect wetlands. • Temporary activities and associated effects occurring in floodplains that would not permanently alter floodplain functions and values, result in downstream displacement of floodwaters, or create new or additional hazards to downstream populations or land uses. The DAF would issue a site-specific FONPA in accordance with EO 11988, Floodplain Management and the Air Force EIAP (32 CFR Part 989) for proposed fuels treatments that would temporarily occur in and affect floodplains. • No establishment of new permanent permitted sources of discharges to surface water bodies or groundwater. • No new permanent withdrawals of surface or groundwater that would potentially exceed the existing or projected capacity of previously established water supplies for a DAF or other DoD property, or for local / off-base communities. • No new temporary or permanent releases or discharges to injection wells or establishment of new or permanent injection wells.	• The proposed fuels treatments would require establishment of a new permanent permitted discharge to a surface water body or groundwater. • The proposed fuels treatments would require new permanent withdrawal of surface water or groundwater that would potentially exceed existing or projected capacity of previously established water supplies for a DAF or other DoD property, or for local / off-base communities. • The proposed fuels treatments would require new temporary or permanent releases or discharges to injection wells or establishment of new or permanent injection wells.
Earth Resources	• Less than significant potential adverse effects on soils. Appropriate BMPs would be applied during fuels treatment to prevent or minimize soil erosion. Excavated	• The potential for significant adverse effects on soils that cannot be minimized through application of appropriate BMPs or mitigation measures.

Table 5-1 Thresholds for Preparing Tiered or Supplemental NEPA Analysis and Documentation (continued)

PEA Resource	Effects Covered by this PEA	Threshold / Trigger for Preparation of Supplemental NEPA Analysis / Documentation
Earth Resources *(continued)*	or disturbed soils would be replaced in-kind or graded and recontoured to conditions resembling their pre-disturbance condition, respectively. New fill soils and recontoured soils would be graded to achieve positive drainage away from roads, facilities, and other structures towards appropriate receiving basins. New fill soils and recontoured soils would be planted or reseeded with native or adapted vegetation to prevent ongoing soil erosion.	• Potential adverse effects on geological resources, paleontological resources, and topography, which are not included for detailed analysis in the PEA.
Cultural Resources	• No potential adverse effect on historic properties under Section 106 of the NHPA, as determined through consultation between DAF, SHPO, and ACHP. • Potential short-term adverse effects that could temporarily alter the historic setting, feeling, or character of a historic property, but which the SHPO agrees would cease when the proposed fuels treatments have been completed. • Potential adverse effects that are resolved in a 36 CFR 800.6(c) Memorandum of Agreement between DAF and the SHPO	• Potential adverse effect on historic properties under Section 106 of the NHPA that cannot be resolved through consultation with the SHPO and ACHP and application of appropriate mitigation measures.
Human Health and Safety	• Less than significant short-term potential adverse effects on HH&S of on-base and off-base populations. • Workers involved with proposed fuels treatments would adhere to all applicable HH&S requirements to prevent or minimize the risk of temporary or permanent injuries and exposure to hazardous substances. • No long-term potential adverse impacts on HH&S of on-base and off-base populations.	• The potential for significant adverse effects on HH&S of on-base and off-base populations that could not be minimized through application of appropriate BMPs. • The proposed fuels treatments would have a high likelihood of resulting in temporary or permanent injuries to workers involved with proposed fuels treatments or exposure of workers to hazardous substances that could not be minimized through adherence to applicable BMPs and HH&S requirements.

Table 5-1 Thresholds for Preparing Tiered or Supplemental NEPA Analysis and Documentation (continued)

PEA Resource	Effects Covered by this PEA	Threshold / Trigger for Preparation of Supplemental NEPA Analysis / Documentation
Human Health and Safety (*continued*)		• The proposed fuels treatments could result in permanent potential adverse effects on HH&S of on-base or off-base populations.
Air Quality	• Less than significant short-term potential adverse effects on local or regional air quality that would be controlled and minimized to the extent practicable through application of appropriate BMPs. • Pollutant emissions from the Proposed Action that would not cause a maintenance area designated as "in attainment" with the NAAQS to be redesignated as "nonattainment." • Emissions from the Proposed Action that would not delay or prevent a nonattainment area from achieving the goals and objectives of an approved Maintenance Plan to be redesignated as "in attainment." • The Proposed Action would not establish a new source of pollutant emissions requiring permitting under the CAA. • No other permanent potential adverse effects on air quality.	• The potential for adverse effects on air quality that could not be controlled or minimized through application of BMPs or mitigation measures. • Pollutant emissions from the Proposed Action could cause an area designated as "in attainment" with the NAAQS to be redesignated as "nonattainment." • Emissions from the Proposed Action could delay or prevent a nonattainment area from achieving the goals and objectives of an approved Maintenance Plan and being redesignated as "in attainment." • The Proposed Action would establish a new source of pollutant emissions requiring permitting under the CAA.
Noise	• Less than significant potential adverse effects from noise that would be controlled and minimized to the extent practicable through application of appropriate BMPs. • Worker exposure to potentially harmful noise levels would be prevented or minimized to safe levels through use of personal protective equipment and adherence to applicable HH&S measures. • The exposure of on-base and off-base populations to potentially harmful or annoying noise levels would be minimized by distance between listeners and noise-generating activities, adherence to applicable procedures (e.g., no noise-generating activities outside of normal work	• The potential for adverse effects from noise that could not be controlled or minimized through application of appropriate BMPs. • Worker exposure to potentially harmful noise levels could not be prevented or minimized to safe levels through use of personal protective equipment and adherence to applicable HH&S measures. • The exposure of on-base and off-base populations to potentially harmful or annoying noise levels could not be minimized by distance between listeners and noise-generating activities, adherence

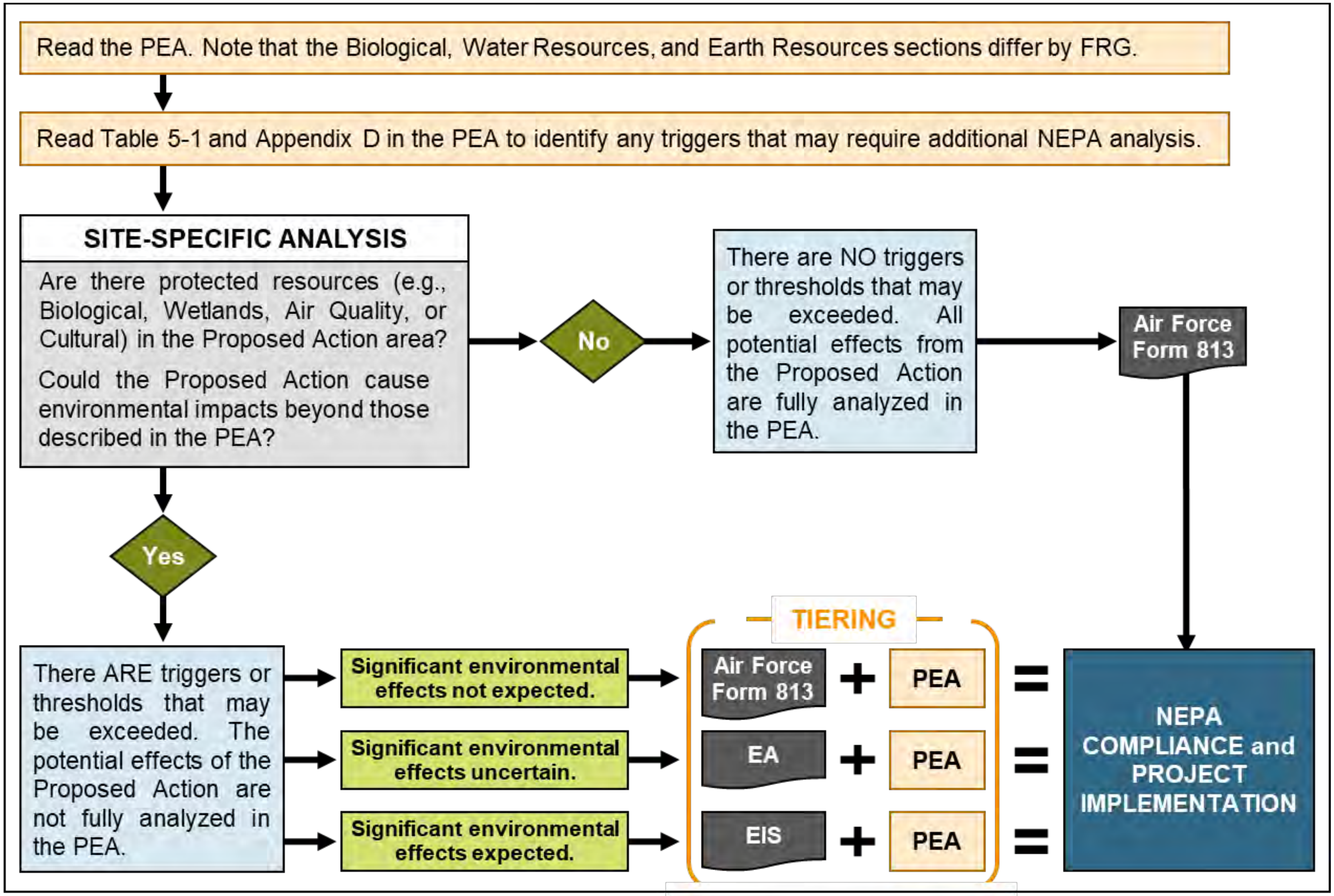
Table 5-1 Thresholds for Preparing Tiered or Supplemental NEPA Analysis and Documentation (continued)

PEA Resource	Effects Covered by this PEA	Threshold / Trigger for Preparation of Supplemental NEPA Analysis / Documentation
Noise *(continued)*	hours [7:00 a.m. to 5:00 p.m. Monday through Friday]), use of muffled or quiet-running equipment, and other measures. • The Proposed Action would not establish a new permanent source of noise. • No other permanent potential adverse effects from noise on workers or on-base or off-base populations.	to applicable procedures, use of muffled or quiet-running equipment, and other measures. • The Proposed Action would establish a new permanent source of noise. • Any other permanent adverse effects from noise on workers or on-base or off-base populations.
Infrastructure	• Less than significant potential for short-term adverse effects on infrastructure that would be prevented or minimized through site-specific planning and application of appropriate BMPs. • Temporary shutdowns or re-routings of utility systems or temporary on-base or off-base road closures required by proposed fuels treatments would be less than 24 hours and coordinated with appropriate on-base and off-base authorities and stakeholders, as applicable. • Prescribed burns would be coordinated with DAF and civilian air traffic controllers to prevent or minimize potential adverse effects from smoke, haze, and ash on aircraft operations. • No permanent potential adverse effects on infrastructure.	• The potential for significant adverse effects on on-base or off-base infrastructure that could not be prevented or minimized through site-specific planning and application of appropriate BMPs or mitigation measures. • The Proposed Action could result in destruction or damage to existing infrastructure that prevents delivery of service or use of the system for more than 24 hours. • The Proposed Action could result in the complete destruction of or damage to existing infrastructure that requires reconstruction of the facility or system to function at its previous level of service. • The Proposed Action could result in damage to or alteration of an area such that previously planned infrastructure can no longer be built or operated in that area and must be re-sited. • Long-term risk of destruction of or damage to infrastructure from uncontrolled wildfires that is not managed and minimized through continued treatment of fuels. • Any other permanent adverse effects.

Table 5-1 Thresholds for Preparing Tiered or Supplemental NEPA Analysis and Documentation (continued)

PEA Resource	Effects Covered by this PEA	Threshold / Trigger for Preparation of Supplemental NEPA Analysis / Documentation
Environmental Justice	• Less than significant potential adverse effects on any of the following, which would be prevented or minimized through adherence to established procedures and application of appropriate BMPs: • Environmental justice populations that would experience effects that are the same as or similar to those experienced by non- environmental justice populations. • Buildings, structures, properties, or sites having a documented historic, cultural, or religious significance to environmental justice populations. • Access to firewood, vegetation, and/or fish and wildlife used to support subsistence populations. • No permanent disproportionately high and adverse effects on environmental justice populations.	• Disproportionately high and adverse potential effects on environmental justice populations from the Proposed Action that would consist of any of the following: • Human death or permanently debilitating injury. • Temporary displacement from housing or employment/income, without fair compensation, for more than 12 hours. • Permanent displacement from or destruction of a residence or business without fair compensation or replacement. • Exposure to hazardous and toxic substances that exceeds applicable state or federal regulatory standards. • Permanent alteration or destruction of, or permanent loss of access to, a building, structure, property, or site having a documented historic, cultural, or religious significance. • Permanent loss of access to quantities of firewood, vegetation, and fish and wildlife that are sufficient to support subsistence populations. • Permanent destruction or alteration of an indoor or outdoor location such that religious or cultural practices previously occurring at that location can no longer be performed or conducted.

Notes:
ACHP = Advisory Council on Historic Preservation; BGEPA = Bald and Golden Eagle Protection Act; BMP = Best Management Practice; CAA = Clean Air Act; CFR = Code of Federal Regulations; DAF = Department of Air Force; DoD = Department of Defense; EIAP = Environmental Impact Analysis Process; EO = Executive Order; ESA = Endangered Species Act; FONPA = Finding of No Practicable Alternative; HH&S = human health and safety; MBTA = Migratory Bird Treaty Act; NAAQS = National Ambient Air Quality Standards; NHPA = National Historic Preservation Act; NMFS = National Marine Fisheries Service; PEA = Programmatic Environmental Assessment; SHPO = State Historic Preservation Officer; USACE = US Army Corps of Engineers; USFWS = US Fish and Wildlife Service



Notes:
EA = Environmental Assessment; EIS = Environmental Impact Statement; FRG = fire regime group; NEPA = National Environmental Policy Act;
PEA = Programmatic Environmental Assessment

Figure 5-1 Site-specific Analysis Steps

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APPENDICES

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APPENDIX A - LIST OF DEPARTMENT OF THE AIR FORCE-MANAGED INSTALLATIONS AND ANCILLARY LOCATIONS

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APPENDIX A LIST OF DEPARTMENT OF THE AIR FORCE-MANAGED INSTALLATIONS AND ANCILLARY LOCATIONS

Table A-1 Department of the Air Force Installation List

Installation [1]	Location
EAST REGION	
Avon Park WSM	
Avon Park AFR	Florida
Patrick SFB / Cape Canaveral SFS	Florida
Homestead AFB	Florida
MacDill AFB	Florida
Eglin WSM	
Eglin AFB	Florida
Tyndall AFB	Florida
Moody AFB / Grand Bay Weapons Range	Georgia
Hurlburt Field	Florida
Barksdale WSM	
Barksdale AFB	Louisiana
Columbus AFB	Mississippi
Little Rock AFB	Arkansas
Keesler AFB	Mississippi
Scott AFB	Illinois
JB McGuire-Dix-Lakehurst WSM	
JB McGuire-Dix-Lakehurst	New Jersey
Warren Grove Range	New Jersey
Cape Cod AFS	Massachusetts
JB Langley-Eustis	Virginia
New Boston SFS	New Hampshire
Westover ARB	Massachusetts
Wright-Patterson AFB	Ohio
Youngstown ARS	Ohio
Dover AFB	Delaware
Hanscom AFB	Massachusetts
JB Andrews	Virginia
Pittsburg ARS	Pennsylvania
JB Charleston-Shaw WSM	
JB Charleston Shaw	South Carolina
Poinsett ECR	South Carolina
Arnold AFB	Tennessee
Dare County Range	North Carolina
Dobbins ARB	Georgia
Robins AFB	Georgia
Maxwell AFB/Gunter Annex	Alabama
Seymour Johnson AFB	North Carolina

Table A-1 Department of the Air Force Installation List (continued)

Installation [1]	Location
MIDWEST REGION	
Cheyenne Mountain WSM	
Cheyenne Mountain SFS	Colorado
Air Force Academy	Colorado
Farish Recreational Area	Colorado
Buckley AFB	Colorado
McConnell AFB	Kansas
Schriever SFB	Colorado
Peterson AFB	Colorado
Whiteman AFB	Missouri
FE Warren AFB	Wyoming
Kirtland WSM	
Kirtland AFB	New Mexico
Holloman AFB	New Mexico
Melrose AFR	New Mexico
Cannon AFB	New Mexico
Ellsworth WSM	
Ellsworth AFB	South Dakota
Offutt AFB	Nebraska
Malmstrom AFB	Montana
Grand Forks AFB	North Dakota
Minot AFB	North Dakota
Minneapolis-St Paul ARS	Minnesota
JB San Antonio WSM	
JB San Antonio-Lackland	Texas
Dyess AFB	Texas
Goodfellow AFB	Texas
Tinker AFB	Oklahoma
Vance AFB	Texas
Altus AFB	Oklahoma
Carswell ARS	Texas
Laughlin AFB	Texas
Sheppard AFB	Texas
WEST REGION	
Vandenberg WSM	
Vandenberg AFB	California
Los Angeles AFB	California
March ARB	California
Edwards AFB	California
Pillar Point AFS	California

Table A-1 Department of the Air Force Installation List (continued)

Installation [1]	Location
Beale WSM	
Beale AFB	California
Travis AFB	California
Nellis WSM	
Nellis AFB	Nevada
Nevada Test and Training Range	Nevada
Luke AFB	Arizona
Barry M Goldwater Range	Arizona
Davis Monthan AFB	Arizona
Mountain Home WSM	
Mountain Home AFB	Idaho
Mountain Home Range Complex	Idaho
Hill AFB	Utah
Utah Test and Training Range	Utah
Fairchild AFB	Washington
JB Elmendorf-Richardson WSM	
JB Elmendorf-Richardson	Alaska
Eielson AFB	Alaska
Clear SFS	Alaska

Notes:

[1] Ancillary locations associated with these installations are included in the Programmatic Environmental Assessment.

AFB = Air Force Base; AFR = Air Force Range; AFS = Air Force Station; ARB = Air Reserve Base; ARS = Air Reserve Station; ECR = Electronic Combat Range; JB = Joint Base; SFB = Space Force Base; SFS = Space Force Station; WSM = Wildland Support Module

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APPENDIX B - STAKEHOLDER COORDINATION AND CONSULTATION

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APPENDIX B STAKEHOLDER COORDINATION AND CONSULTATION

B.1 INTRODUCTION

Scoping is an early and open process for developing the breadth of issues to be addressed in an Environmental Assessment (EA) and for identifying significant concerns related to an action. Per requirements of Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416, federal, state, and local agencies with jurisdiction that could be affected by the Proposed Action or alternatives were notified during the development of this Programmatic EA (PEA).

The Intergovernmental Coordination Act and EO 12372 require federal agencies to cooperate with and consider state and local views in implementing a federal proposal. Through the coordination process, the Air Force Wildland Fire Branch sent letters to potentially interested and affected governmental agencies, government representatives, elected officials, and interested parties potentially affected by the Proposed Action. The stakeholders engagement list and agency intergovernmental coordination letters and responses are included in this appendix.

B.2 PUBLIC AND AGENCY REVIEW

The DAF published a Notice of Availability for this Draft PEA and proposed Finding of No Significant Impact (FONSI) in *USA Today* and the *San Antonio Express-News*. The notice ran for two consecutive days and indicated the availability of the Draft PEA and Proposed FONSI for a 45-day review and comment period. The NOA provided a website address for access to the PEA and Proposed FONSI; contact information for more information; addresses of local libraries where printed copies of the PEA and Proposed FONSI could be viewed; and instructions for submitting comments electronically or by postal mail. Letters announcing the availability of the PEA and Proposed FONSI for public review were sent to the agencies and organizations, listed in **Appendix B** during the 45-day public comment period.

The public comment period ended on April 10, 2024. One public comment on the Draft PEA was received f and is provided in **Appendix B**.

B.3 STAKEHOLDER COORDINATION

Coordination letters are included in this appendix. If an installation conducts a separate tiered National Environmental Policy Act (NEPA) analysis for a specific fuels reduction or management action, then specific agency and government-to-government consultations may be necessary. The following graphic provides more detail regarding which of the fuels removal activities may require agency consultation. Installations would follow all laws and regulations and would initiate consultation with the appropriate agencies when necessary.

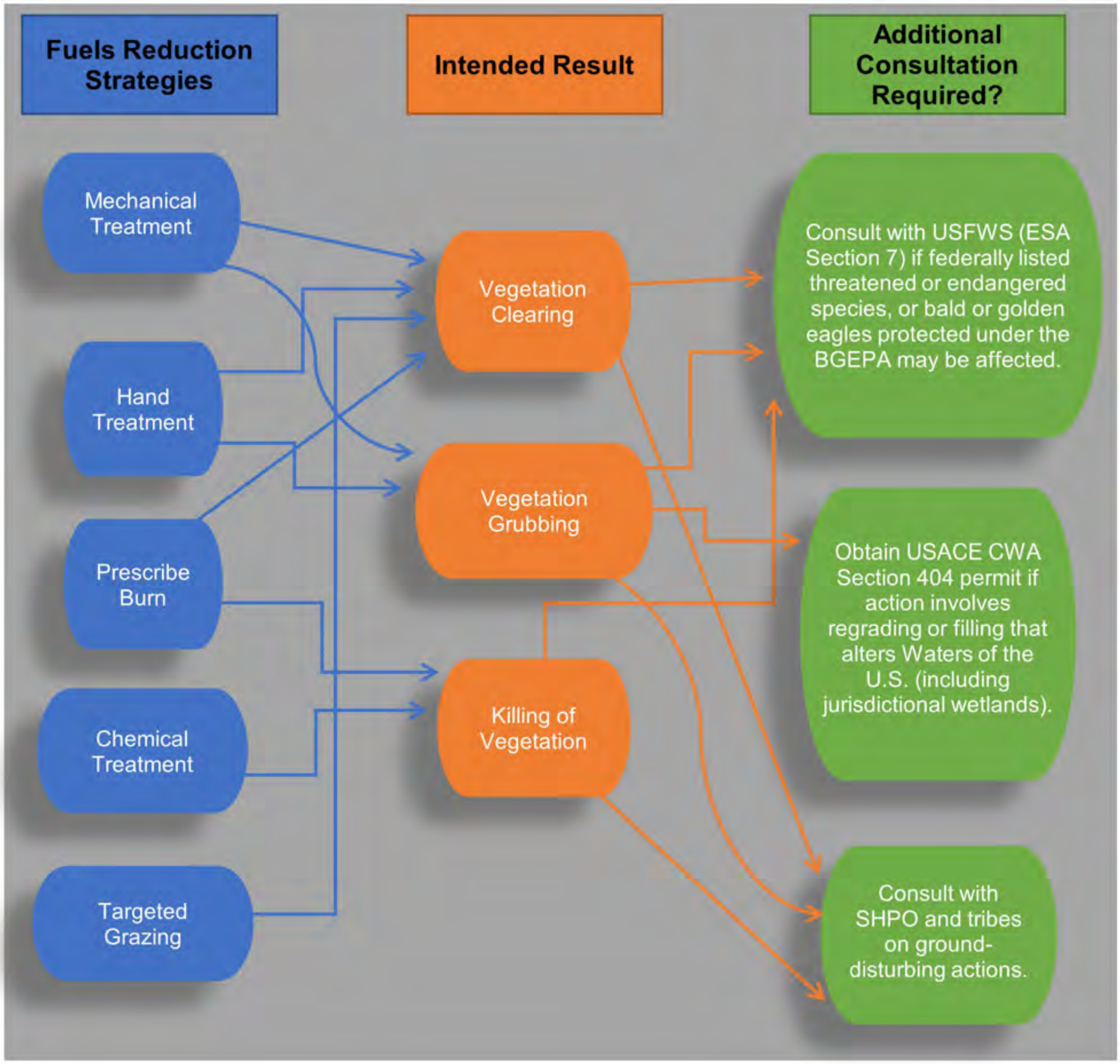

Figure B-1 Typical Fuels Treatment Types and Associated Consultations

Notes:
The need for consultations would be determined by the installation on a project-specific basis.

B.4 STAKEHOLDER LIST

Federal Agencies

Christopher Wilson
Office of Federal Agency Programs
Advisory Council on Historic Preservation
401 F Street NW, STE 308
Washington, DC 20001

Bureau of Indian Affairs (BIA)
1849 C Street NW, MS-4606
Washington, DC 20240

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Branch of Environmental & Cultural Resources Management
1001 Indian School Road NW
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Division of Wildland Fire
Management - National Interagency Fire Ctr
3833 South Development Avenue
Boise, ID 83705

National Interagency Fire Center
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Boise, ID 83705

Grant Beebe
Office of Fire & Aviation
Bureau of Land Management (BLM)
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US Environmental Protection Agency
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B.5 SAMPLE SCOPING LETTER

DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE SAN ANTONIO LACKLAND TEXAS

2 May 2023

Julianne Turko
Air Force Civil Engineer Center NEPA Division (AFCEC/CZN)
2261 Hughes Ave, Suite 155
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Joaquin Ramirez Cisneros, President
International Association of Wildland Fire
1235 North Avenue West
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Dear Mr. Cisneros:

The Department of the Air Force (DAF) is preparing a Programmatic Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts associated with the implementation of fuels reduction and management activities on DAF-managed lands. The reduction and management of fuel loads would allow for mission sustainment and build ecosystem resiliency that promotes both biodiversity and sustainability, resulting in the protection of natural and cultural resources.

The Programmatic EA for implementation of fuels reduction and management activities is evaluating two alternatives: the Action Alternative and the No Action Alternative. The Action Alternative would implement a full suite of fuels management tools as deemed appropriate on DAF-managed lands. These methods comply with all applicable federal regulations, state regulations, and permitting requirements. Implementation of the Action Alternative would ensure that a programmatic approach to fuels reduction and management is used to optimize both mission protection and ecosystem management. Under the No Action Alternative, the DAF would conduct site-specific environmental analysis for fuels reduction and management activities.

As part of the DAF's Environmental Impact Analysis Process, we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the environmental analysis. To ensure the Air Force has sufficient time to consider your input in the preparation of the Programmatic Draft EA, please forward your written comments or requests for additional information to Robin Divine by email to robin.divine@us.af.mil. We request your comments within 45 days of receipt of this letter to ensure we can address them during the environmental impact analysis process. Thank you for your assistance.

Sincerely,

Julianne Turko

Julianne Turko
Environmental Impact Analysis Process
Subject Matter Expert (EIAP SME)
NEPA Division (AFCEC/CZN)

Attachment
1. Locations of DAF Wildland Fire Branch Wildland Support Modules and Associated Installations

Attachment 1 - Locations of DAF Wildland Fire Branch Wildland Support Modules and Associated Installations

B.6 Scoping Response Letters

B.6.1 USDA Forest Service Rocky Mountain Research Center

A summary of wildland fire research findings in reference to concerns/issues that may arise during the Department of the Air Force's environmental impact analysis process.

Summary of Request

The Department of the Air Force (DAF) is preparing a Programmatic Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts associated with the implementation of fuels reduction and management activities on DAF-managed lands. The reduction and management of fuel loads would allow for mission sustainment and build ecosystem resiliency that promotes both biodiversity and sustainability, resulting in the protection of natural and cultural resources.

The following information is intended to meet the DAF request for input in identifying general or specific issues or areas of concern that should be addressed in the environmental analysis.

1.0 Introduction

Perhaps the single biggest question most people have concerning restoration treatments, and especially when using prescribed burns, is "do they actually work?" There is strong evidence that fuel treatments can be a highly effective tool to reduce fire hazard with a stand if done properly, although evaluating landscape-scale effectiveness is more challenging (McKinney et al. 2022). Evaluating the effectiveness of a past or future restoration treatments, especially in the context of fire hazard reduction, is an extremely difficult and complicated task because of many interacting factors (McKinney et al. 2022; Ott et al. 2023). This report presents important factors that influence effectiveness of fuel treatments for fire hazard reduction. Since the majority of the questions concern using restoration for affecting changes in fire behavior (i.e., fuel treatments), we will confine most of our introductory material to fire management issues. We will then address those factors that may influence restoration treatment efficacy as a fuel treatment. And then we develop a set of recommendations for the EA process for fire behavior modification and fuel treatment. Last, we will include a section on other published research papers that may be cited in support of the EA process.

1.1 What is the difference between restoration vs fuel treatments?

An ecological restoration treatment is an action that leads to the managing or assisting the recovery of an ecosystem that has been degraded, damaged or destroyed as a means of sustaining ecosystem resilience and conserving biodiversity (Martin 2017). A fuel treatment is the manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling and burning) (NWCG 2006). These two treatments are not always the same in both action and objective (for in depth discussion, see Hood et al. 2022, and Stephens et al. 2021.). Many ecological restoration treatments can also reduce fuels, and similarly many fuel treatments can lead to ecological restoration. However, there are many fuel treatments that do not accomplish any restoration objectives (Fulé et al. 2001, Baker et al. 2007). Removing fire-tolerant species and leaving fire-intolerant species during a mechanical fuel treatment is one example, and mastication treatments that move burnable biomass from the canopy to the forest floor as surface fuels is another fuel treatment that is not ecological viable (Battaglia 2013). In our experience, many of the treatments used to restore fire-prone ecosystems can also be effective fuel treatments, but rarely is the opposite true – most fuel treatments are rarely effective restoration treatments.

1.1.1 Restoration treatments

The Forest Service defines restoration in its Ecosystem Restoration Policy (FSH 1909.12 and 36 CFR 219.19) as "the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions. Functional restoration focuses on the underlying processes that may be degraded, regardless of the structural condition of the ecosystem." This is wonderful wording, but the wording is hardly prescriptive or practical for implementation. What are the scales of restoration? What are the variables to use to assess restoration priorities and to monitor for success? Reestablishing to what reference? Historical structures or future predictions? Additional detail is needed to fully grasp what exactly is "restoration". This lack of specifics in restoration definitions and policy is one source of confusion with interpreting EA documents by the publics.

Restoring fire-prone areas where fires have been excluded for over a century because of fire suppression and prevention policies remains one of the most difficult tasks in land management. Past restoration efforts concentrated on recreating historical ecosystem structure and function (Keane et al. 2009). However, developing stand-level treatment prescriptions to create historical stand structures was somewhat ambiguous and scale inappropriate because they didn't recognize the high natural variability of these conditions at landscape scales. Historical range and variability (HRV) then became a common reference for building treatment designs (Wiens et al. 2012), but many studies identified that future climates may not support the same historical variability in landscape dynamics (Millar and Woolfenden 1999). Now, restoration goals and design seem to vary around the latest ecological issue, whether it be biodiversity, resistance, or resilience (Naveh 1994, Waltz et al. 2014, Johnston et al. 2018, Brown et al. 2019). Many fire scientists that work in restoration often feel that restoration treatments should create quasi-historical landscape structures that will be resistant to future disturbances and also resilient to future climates (Hobbs et al. 2014, Waltz et al. 2014, Stephens et al. 2016). For the purposes of this report, we assume that the major goal of restoration will be to use HRV as a guide or reference for restoring landscapes, and then creating treatment designs and prescriptions that will enhance historical stand and landscape structures to be more resistant to future disturbances and more resilient under climate change (Keane et al. 2018, Higuera et al. 2019). Therefore, restoration of fire-prone ecosystems will involve designing treatments to create stands within landscapes that, when burned by wildfire, will experience fire effects that were common historically and that will leave the landscape within HRV by altering how fire burns both within and outside treated areas (McKinney et al. 2022). Restoration actions in frequent-fire ecosystems, such as ponderosa pine forests, often retain large, relic individuals that are able to survive future wildfires (Agee and Skinner 2005, Martinson and Omi 2013). Retaining large trees that have survived many disturbances and have lived through many climate fluctuations will ensure high survival rates for future disturbances and offer the best genetic sources for the future. Ecosystems with long fire return intervals, such as the Canadian boreal or the Rocky Mountain lodgepole pine forests, experience primarily high intensity crown fires so the goal of keeping large trees may not be a concern. Instead, emphasizing reducing fuels, an approach that balances what can survive a wildfire with what fire behaviors and effects are acceptable both ecologically and socially, will often result in both fuel reduction and beneficial ecological restoration.

There is much written on what reference conditions that managers should use to guide designing and planning restoration treatments (Fulé et al. 2001). We propose to use historical reference conditions as a benchmark for characterizing and quantifying ecological resilience for land management, but to also consider future range of variability (FRV), as historical condition may not be feasible with current and projected climate and invasive species. The resist-accept-direct (RAD) framework is suggested to balance HRV with FRV and other management constraints (Lynch et al. 2021). Historical conditions have been used extensively and successfully as references, benchmarks, or targets by researchers and land managers over the last two decades (Landres et al. 1999, Wiens et al. 2012). The concept behind historical range and variation (HRV) is that historical ecosystem characteristics, described by management-relevant variables such as burned area, species composition, or patch size distribution, represent the broad envelope of responses possible for a persistent (resilient) ecosystem under natural perturbations of climate, competitive stress, disturbances, and other stressors (Keane et al. 2009, Keane 2016b). The HRV concept captures the fact that ecosystems are dynamic and highly variable, and their potential responses to changing conditions are consequently best represented by past variability of ecological characteristics (Veblen 2003).

1.1.2 Fuel treatments

Fuel treatment designs typically focus on two general fire management objectives that relate to reducing hazardous fuels—creating conditions that reduce resource damage from wildfire (proactive) and that aid fire suppression efforts such that the fire is easier to control (reactive) (Deal 2018; NWCG 2014). As Reinhardt et al. (2008) explicitly state, the goal of fuel treatments should never be to stop fire spread or reduce ignitions, rather it should be to modify fire behavior to lessen adverse fire effects (Safford et al. 2012) and allow firefighters to fight the fire safely using direct techniques. Fitch et al. (2018) also mentions that some fuel treatments reduce wildfire suppression costs. No realistic treatment will ever totally reduce fire occurrence (Agee and Skinner 2005). Further, it is unrealistic to expect fuel treatments to be 100% effective in reducing fire severity, as extreme weather events can override fuel treatments such that high-severity fire may still occur (Lydersen et al. 2014). That said, fuel treatments have repeatedly been shown to decrease tree mortality and increase resilience to subsequent wildfire (Fulé et al. 2012, Waltz et al. 2014). However, some fuel treatments may actually increase grass abundance and growth, which may actually increase spread rate (Moghaddas and Craggs 2007). Therefore, if any restoration action can reduce fuels so that direct suppression is possible and the resultant fire is less severe, then it would meet the criteria for a fuel treatment.

Fuel treatments can be highly effective in reducing fire hazard if done properly (Brown et al. 2004, Stephens et al. 2009, Fulé et al. 2012). However, evaluating the effectiveness of a past or future fuel treatments, especially over a landscape scale is very challenging and much more research is needed (McKinney et al. 2022). Effective landscape-scale fuel treatments mitigate the likelihood of high-severity fire both inside and outside treated areas. In a review of stand-level fuel treatment effectiveness in ponderosa and Jeffrey pine forests, Fulé et al. (2012) found treatments that combined thinning with prescribed burning were more effective than either treatment alone. In addition to reducing fire hazard, fuel treatments may have the added benefits of increasing resilience to other disturbances and achieving broader ecological and social objectives (Kalies and Kent 2016). Fuel and restoration treatments that included thinning that were later subjected to a regional mountain pine beetle outbreak exhibited much lower ponderosa pine mortality and fuel accumulations compared to untreated and burned-only stands (Hood et al. 2016, Crotteau et al. 2020). Fuel treatments that reduce forest basal area can also improve physiological stress and buffer against the effects of drought and warming climate (Bradford and Bell 2017).

Mastication is an example of a mechanical treatment that may be proposed as a fuel treatment but it accomplishes few restoration objectives. Mastication uses specialized equipment to shred, chip, or break apart dead and live trees to raise canopy base height, decrease canopy bulk density, and reduce fuelbed depth (Harrod et al. 2009). This treatment is amenable to many managers because it is relatively cheap and poses little risk when compared with prescribed fire. However, the tremendous amount of shattered fuel left on the forest floor may cause adverse ecological consequences to the treated stand, such as increased rainfall interception, reduced plant regeneration, altered nutrient cycling, and increased soil insulation (Kane et al. 2010). Moreover, plant mortality may be high when masticated stands eventually burn in wildfires because of deep soil heating from smoldering combustion of the thick duff and litter layers and high fire intensities from burning the dense surface fuels (Kreye et al. 2014). Short-term decreases in fire hazard may eventually be overwhelmed by long-term declines in ecological integrity for those fuel treatments that don't address ecological concerns.

Forests dependent on frequent, low-severity fire may justify treating larger proportions of the landscape and require frequent maintenance of fuels to restore and sustain open forests that foster low-severity wildfire. In contrast, fuel treatments in ecosystems with historical fire regimes of infrequent, high-severity fires (e.g., high-elevation cold forests) and mixed-severity fires (e.g., moist and mesic mixed conifer forests) may emphasize heterogenous mosaics of species composition and forest structural stages that will vary over time and space and require less frequent treatment maintenance. We should also mention here that wildfires often create effective fuel breaks that also serve as fuel treatments (North et al. 2012, Cansler and McKenzie 2013, Parks et al. 2016). Allowing wildfires to burn under a prescribed set of weather conditions (i.e., wildland fire use) can be an economical alternative to employing direct treatment for ecological restoration or fuel treatments (Keane et al. 2019).

Shaded fuel breaks and fuel breaks are another type of fuel treatment designed to increase opportunities to safely use fire suppression tactics (Agee et al. 2000). More research is needed to determine the actual effectiveness of fuel breaks for increasing fire suppression opportunities, as well as their ecological impact on ecosystems (Shinneman et al. 2019).

1.3 Time and space scales

The temporal and spatial contexts of any treatment are easily the most important factor when evaluating restoration and fuel treatment efficacy and success (Ziemer 1997, Kellogg et al. 2008, Chung et al. 2013, Barros et al. 2017). Both restoration and fuel treatments are only effective for a finite time period – vegetation growth and productivity and deposition of senescing and killed vegetation biomass will increase both canopy and surface fuel loadings and create more contiguous fuelbeds (Keane 2016a).

Moreover, shade tolerant, fire sensitive species will eventually become established and grow within the treated area quickly rendering restoration treatments ineffective. The time over which treatments are effective is often called treatment longevity (Stephens et al. 2012). Longevity is important for planning and scheduling future fuel treatments, but assessing treatment longevity is difficult because of the temporal and spatial complexities of fuelbed dynamics (Keane 2015). The wide ranges of measurements that can be used to assess longevity coupled with the incredible variability and complexity of fuelbeds as they interact with the biophysical environment make estimating longevity nearly impossible.

The spatial scale of treatment implementation is also important. The pattern and extent of the treated area within a defined spatial domain (i.e., landscape) will often determine the success of any restoration or fuel treatment (Churchill et al. 2013, Dickinson 2014, Ziegler et al. 2017). If the treatment area is small, and the majority of the landscape is in an unrestored or untreated state, then the treatment probably has little chance of actually restoring fire-prone ecosystems because wildfires from outside the treated area may become so intense that they cause adverse effects within the treatment area (Finney 2001, Finney et al. 2007, Waltz et al. 2014). Moreover, if too much area is treated, it may create landscape structures and patterns that are not resilient because they were never observed historically (Keane et al. 2019). Matching the amount of treated area with landscape condition and attributes is vitally important in treatment planning and implementation.

1.4 Fuels vs Climate

There is great debate in the wildland fire community as to what is the most important factor influencing fire occurrence – wildland fuels or climate and weather (Flannigan and Harrington 1988, Krawchuk et al. 2009, Abatzoglou and Kolden 2013, Archibald et al. 2013). Many people have shown that antecedent climate and fire weather are important factors that influence fire frequency. But yet, that landscape cannot burn unless there are sufficient wildland fuels to support a fire and those fuels must be dry enough to burn. Many believe that severe fire weather (hot, dry, and windy) will overwhelm any fuel treatment and use this argument as a reason to justify a "no treatment" approach (i.e., no logging) for managing wildfire. This, of course, would be true if the objective of the fuel treatment were ONLY to limit fire occurrence as most restoration and fuel treatments leave sufficient fuel for fire spread (Crotteau et al. 2016). However, restoration and fuel treatments RARELY have that sole objective. As Reinhardt et al. (2008) recommend, the goal of any fuel treatment is to limit fire intensity and therefore severity, rather than to limit fire occurrence. In reality, wildland fuels are the only factor that can be controlled by management and many restoration treatments that are also designed as fuel treatments can be effective at limiting fire severity, albeit these treatments may be expensive.

1.5 Restoration versus carbon sequestration

Living forests can sequester atmospheric carbon into biomass and thus offset carbon emissions from human activities. However, forests don't live forever, and sequestered carbon can sometimes be rapidly cycled back to the atmosphere, such as through consumption by wildfire, or slowly returned to the atmosphere when trees die and their dead biomass decompose. Managing forest structures for maximum carbon sequestration is often counter to ecosystem management and ignores disturbance regimes. For example, forests where shade-tolerant trees have invaded the understory during long periods of fire suppression may have more carbon sequestered in total biomass but these stands don't represent ecologically-viable conditions or the ecosystems won't be resilient (e.g., shade tolerant, fire sensitive trees will all die in the next wildfire making the stand go from a carbon sink to a source). Restoration treatments, therefore, may require biomass removal to return stands to more appropriate conditions, and also reduce the potential for high intensity wildfires such that more trees survive post-fire (i.e., stable carbon). These treatments may include understory thinning and prescribed burning. Therefore, while the benefits of forests in carbon sequestration are well documented, forest restoration activities may require biomass removal to return forest structures to healthier, more resilient conditions. There is increasing evidence that reducing wildfire severity, even at the cost of initial carbon reductions from thinning, will result in a more stable, sustainable carbon sink over the long term (Hurteau et al. 2016, Clyatt et al. 2017).

It may be easier, and more ecological appropriate, to view forests as carbon neutral over long time periods because most modeling has shown that, over centuries, carbon sequestered minus carbon emitted (by disturbance and decomposition) is very close to zero (called net ecosystem exchange=productivity-decomposition-disturbance), regardless of land management actions (Waring and Running 2010). Therefore, any questions the public may have on carbon dynamics often assumes a temporal domain, such as 10 years, without looking at long term dynamics.

2.0 Factors that influence treatment efficacy

In general, there are two factors that influence treatment efficacy over time for fire-related concerns– (1) treatment design and implementation and (2) future environmental conditions. The set of factors that govern fuel treatment effectiveness concern the details of treatment design or "does the design of the treatment limit its effectiveness?"

2.1 Treatment design and implementation

How restoration treatments are designed and subsequently implemented have a great deal of influence on their value to fire management as fuel treatments. Basically, there are two kinds of treatments to restore ecosystems – prescribed burning (Rx burning) and mechanical cuttings. In Rx burning, a fire is set by humans if fuel and environmental conditions allow. The set of weather and fuel conditions to conduct the burn is often call the "prescription". Often, wildland fire use is considered a form of Rx burning. There are many forms and types of mechanical cuttings. In forests, trees are cut to reduce canopy fuels (i.e., reduce canopy bulk density and raise canopy base height). If the trees are large enough to be sold for profit, then the cutting is considered "commercial" and many refer to a commercial cutting as "logging". When the cut trees are too small, the cutting is referred to as "non-commercial". The details of the cutting – which trees to cut, which species to retain, which sizes to leave, what to do with the slash, how the trees are transported to the mill– are often referred to as the "silvicultural prescription". Many silvicultural prescriptions also have Rx burning prescriptions. Both Rx burn and silvicultural prescriptions, singularly or in combination, are the most important factors that determine the success of a restoration treatment.

2.1.1 Spatial context

There is nothing more important in determining whether restoration treatments are effective, and if they are effective as fuel treatments, than the spatial and temporal context in which they are designed and implemented (Finney 2001, Schmidt et al. 2008, Collins et al. 2010, McKinney et al 2022). We posit that most restoration or fuel treatments will be less effective if they are planned and implemented at stand scales rather than landscape scales. If designed at a stand level, the treated area might be so small that wildfire may easily ignite tree crowns from outside of the treatment area by spotting or direct convection (Brown et al. 2004). To be truly effective, treatment units must be large, or a large part of the landscape matrix must be treated with multiple treatments (Finney 2001, Chung et al. 2013). Studies often put the amount of landscape that needs to be treated at somewhere between 20-47% of the total area every decade or so depending on the resident ecosystems, climate, and degree of management. Moreover, the pattern of treatment units on the landscape is important in that small treatments that cover large areas of a landscape are not nearly effective as integrating large treatment units into the burn plan (Ager et al. 2010).

2.1.2 Treatment implementation

Many restoration and fuel treatment plans and prescriptions often don't do enough to restore ecosystems or to reduce fuels (Martinson and Omi 2013, Kalies and Kent 2016). Some plans, for example, specify igniting the Rx fire at the moister end of the burning window resulting in light fuel consumption with little fuel reduction and low tree mortality resulting in nominal increases in ecosystem resilience and few reductions in fire hazard (Vaillant et al. 2009, Ziegler et al. 2017). In a mechanical treatment, for example, many small seedlings and saplings of fire-intolerant trees may be left in the understory rendering the treatment ineffective at both restoration and fuel reduction goals because these trees quickly grow into the overstory. Moreover, there may still be sufficient fuel to sustain an intense future wildfire that may wreak ecological harm. More often, treatments are implemented in dense stands with high fuel buildups, often after decades of fire exclusion, and this may result in too high tree mortality using a Rx burn which may eventually create still heavier fuel accumulations after the treatment as the killed tree biomass drops to the ground. Here, another Rx burn may be needed to reduce the recently downed material, or a mechanic treatment could have been implemented prior to the first burn to minimize adverse ecological effects.

One other aspects of treatment implementation is the fine scale pattern created by the treatment (Ottmar and Prichard 2012). Some Rx burning treatments are so light that they don't burn a majority of the stand and many parts of the area remain untreated. More commonly, a mechanical treatment may only treat portions of the area to the specified prescription leaving greater fuels and unacceptable ecological conditions on the remaining part of the stand. In addition, the mechanical treatment may actually leave more fuel on the ground than there was prior to treatment, such as when trees are limbed onsite after they are cut rather than dragged with limbs to a landing. Improper treatment implementation often renders it ineffective at both restoration and fuel objectives.

One of the biggest misconceptions in wildland fire management today is the assumption that "logging" or commercial harvest of trees is an effective restoration or fuel treatment (Ritchie et al. 2013, Peterson et al. 2015). This is nearly impossible to evaluate unless the details of the silvicultural and Rx burning prescription are available, and of course, these details are highly local as they depend on the unique ecological conditions of the pre-treatment stand. The extremely wide variety of silvicultural approaches to commercial logging preclude a definitive assessment of the value of logging for restoration or fuel treatment. Certainly, there are many logging silvicultural prescriptions that are effective as both restoration and fuel treatments, such as group selection cutting in mixed severity fire regimes or thinnings that reduce canopy bulk density and increase canopy base height (Arno et al. 2000, Fule et al. 2002, Keane and Parsons 2010). Without details of the prescription(s), it is nearly impossible to determine the value of the treatment for fire hazard reduction.

2.1.3 Target stand structures.

Effective canopy fuel reduction to minimize crown fire potential often involves heavier thinning than most planners and managers are accustomed. Reducing canopy bulk densities below the minimal value to carry a crown fire often involves removing numerous trees in both the overstory and understory, which may be unacceptable to many members of the public and private landowners (Mason et al. 2007). As a result, compromises in restoration prescriptions often result in stand structures that may continue to be susceptible to crown fires (Reinhardt et al. 2008).

2.1.4 Roads

In most cases, availability or lack of access may significantly constrain the type, extent, and specific location of which restoration activities can be carried out. Depending on the landscape and spatial configuration of roads, the specific location of treatments near roads may also improve treatment effectiveness in modifying landscape scale fire behavior (Salis et al. 2016). Roads can contribute to erosion, although the degree to which this occurs is dependent on many factors (Elliot 2004) and can often be mitigated through best management practices (BMPs).

2.2 Environmental conditions

The next set of factors concern those environmental conditions that may occur today or in the future and could impact the ability of the treatment to accomplish restoration or fire hazard reduction objectives.

2.2.1. Climate

There is always a chance that severe climate conditions both prior and during the fire season may render some restored and treated areas susceptible to high severity fire, especially under climate change. Fire seasons in the future may be so long, hot, and dry that some treatments may not be effective over long-time spans. It is possible that fuel left after a treatment may still generate unwanted high fire intensities and severities when fuel moistures are extremely low. Most studies on climate change and wildland fire predict hotter, drier fire seasons, longer fire seasons, and higher lightning occurrence, all of which may overwhelm a treatment's efficacy.

2.2.2 Vegetation condition

Another important factor in designing fuel treatments is the condition of the vegetation being treated (Sala et al. 2005). Plants in fire-excluded ecosystems are often highly stressed because competition for light, water, and nutrients has been amplified due to both increased number of individuals and high surface fuel buildups that may have altered water and nutrient cycling (Keane et al. 2002, van Mantgem et al. 2009). In long-unburned forests, deep duff and litter layers can accumulate in the absence of fire, so when fires do occur in these fire-excluded stands, high trees mortality can occur even with low intensity fires due to long-term duff smoldering (Hood 2010). Fuel and restoration treatments that fail to recognize initial stand health in their design may cause additional mortality that result in even greater post-treatment surface fuel loadings and unsustainable ecosystems.

2.2.3 Wildfire

It is possible that the next wildfire may be downslope and wind-driven, and therefore become so large and intense that it can easily overwhelm treatment effects and render the treatment ineffective. This often happens when wildfires get so large that their inertias and far-reaching spotting easily crosses into the treatment area and burns at intensities that will not allow direct suppression.

2.2.4 Productivity

It also may be that the treated area might have such high productivity that tree regeneration is rapid and biomass quickly accumulates creating high fuel loadings in the treated area in a very short time. This new fuel accumulation may render the treatment ineffective in less than 10 years (Martinson and Omi 2013), but can be longer depending on the ecosystem (Hood et al. 2020).

3.0 Treatment recommendations

Treatment options for both reducing fuels and restoring fire-prone ecosystems ideally use fire (either wildfires or prescribed burns (Kalies and Kent 2016), but many areas also need prior mechanical treatment before fire is re-introduced. In fire-excluded forests, decades of surface fuel accumulation combined with tree ingrowth of trees has resulted in forests that may be difficult to restore with prescribed fire alone. Therefore, some level of mechanical treatment may be needed to safely apply prescribed fire (Hagmann et al 2021). For example, in western forests that haven't experienced fire in many decades, mechanical treatments are used to reduce tree density, thereby reducing crown fuels (i.e. canopy bulk density), raising canopy base heights, and reducing the probability of active crown fire (Agee and Skinner 2005; Stephens et al. 2021; Ritter et al. 2022). Priority of removal is based on the lack of fire resistance which is either based on tree size or species (Cansler et al 2020). Fire has shaped past landscapes so it can best be used tomorrow for restoring the fire-excluded ecosystems of today. It performs many attractive actions such as (1) reducing canopy fuels by killing fire-susceptible trees and dense regeneration, (2) creating heterogeneous patches and landscapes, (3) consuming fuels, (4) facilitating nutrient and water cycling, and (5) favoring fire-adapted vegetation leading to resilient landscapes (Safford et al. 2012, Scott et al. 2014). Rx fire can inexpensively kill abundant regeneration to lengthen the longevity of the treatment, reduce surface and canopy fuels to decrease wildfire hazard, and lessen tree competition to improve the vigor and resilience of surviving plants. Moreover, the next Rx fire treatment will be much easier to implement (Battaglia et al. 2008). The steep downside of Rx burning is that it is somewhat risky in that an Rx fire may get away and become an unplanned wildfire that may endanger people and property. Rx burn implementation is also highly dependent on the weather: if fuels are too wet there will not be enough consumed to reduce the risk of wildfire or remove unwanted plants, if fuels are too dry there is a greater risk for an escape.

The successful re-introduction of fire will often take multiple treatments staggered in time. In the first entry, mechanical treatments may be needed to reduce canopy fuels so that fire treatments can follow to consume surface fuels and lower residual tree regeneration without high tree mortality (North et al. 2012). Further, it will take several entries into treated stands over time to obtain the stand structures that will be resilient in the face of climate change and resistant to future disturbance events. Some estimate it will take 3 to 7 burns to return landscapes to a semblance of the historic past. Irrespective of treatment strategy, wildfires will eventually burn most areas regardless of the level of fire suppression so designing effective treatment regimes that protect and restore ecosystems while reducing fuels will need to balance society's tolerance for fire with an ecosystems' ability to accumulate fuels using enlightened fire management that fully integrates mechanical treatments and prescribed fire with the eventual wildfires.

The main problem in designing fuel treatments that don't consider wildland fire ecology or restoration objectives is that those treatments will probably be ineffective and even counter-productive in the long run. Fuel treatments should always also restore ecosystems to make them both effective at reducing fuels and useful for other land management objectives. Implementing treatments for the sole purpose of reducing fuels ignores decades of research on the benefits of an ecosystem management approach (Crow and Gustafson 1997). It makes little sense to modify fuels with a treatment that creates unconventional stand structures that will quickly compromise the efficacy of the treatment and will contribute to declines in ecosystem health. Many mechanical canopy fuel treatments, for example, remove trees to reduce CBD and increase CBH without regard to the shade-tolerance and fire-adaptations of the residual species. Leaving shade-tolerant, fire sensitive species may create stand structures that are highly susceptible to future fire and have low resilience to other disturbances (Agee and Skinner 2005). Moreover, shade tolerant residual species can quickly regenerate in treated areas thereby rapidly lowering CBH and quickly rendering the primary treatment ineffective. When the residual stand inevitably does burn, it may have a higher probability of experiencing extensive fire-caused mortality because it is composed of fire susceptible species.

Research has shown that the best results of Rx fire applications are likely to be attained in heterogeneous landscapes where the likelihood of extreme weather conditions is low and a large portion of the landscape is treated (Vakili et al. 2016, Cannon et al. 2019). Effective Rx treatments, as well as mechanical treatments, rarely last more than 10 years and time horizons of 3-5 years are often more appropriate. Moreover, the efficacy of Rx burning appears to increase with additional Rx burns; long-term fuel reduction goals will rarely be achieved after one Rx burn. Long term fuel reduction, especially using Rx burning, can only be attained through a series of proactive actions rather than a one-time treatment. Studies have shown that it may take as many as 3-5 Rx burns to achieve desired fuel reduction goals (Baker 1994). And last, no treatment, Rx or mechanical, is 100% effective at stopping or containing wildfire, and many scientists recommend thinking about Rx fire efficacy as allowable risk rather than as guaranteed outcomes.

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B.6.2 US Geological Survey

[redacted]

From: Steblein, Paul F [redacted]
Sent: Friday, June 30, 2023 3:14:38 PM
To: DIVINE, ROBIN D CIV USAF AFMC AFCEC/CZN [redacted]
Cc: TURKO, JULIANNE M CIV USAF AFMC AFCEC/CZ [redacted] Stumpf, Christa [USA - EMP] [redacted]
Subject: Re: [EXTERNAL] RE: Request for input on PEA for fuels

Robin Divine
EIAP Airspace & Range Technical Advisor (AFCEC/CZN)
Air Force Civil Engineer Center

Dear Robin,

Thank you for the prompt on scoping input towards for a programmatic Environmental Assessment for fuels reduction and management activities on Department of Air Force managed lands. From both a science and management perspective, I would recommend giving attention to some of the following topics in the plan and analysis:

- What types of fuels reduction and management action are appropriate in each in each ecosystem type to sustain fire risk reduction and support for mission objectives? For example, where can prescribed fire be most effectively applied as a treatment and in conjunction with mechanical treatments? Where would control of fire-adapted invasive species be the most appropriate fuels treatment?
- How much treatment is needed and in what spatial patterns to sustain fire risk reduction and support for mission objectives? How can fire risk reduction reduce postfire threats such as debris flow, water flow and quality, sedimentation, and recovery of vegetation (and invasive species)?
- What is the longevity of treatment effectiveness and what schedule of maintenance action be required to sustain fire risk reduction and support for mission objectives?
- What effect do fuels reduction and management action have on natural and cultural resources?
- How are climate change, drought, invasive species, insect/disease outbreak, fuel accumulation and human activity affecting fire behavior – both directly from weather conditions and indirectly in changes to fuel types, fuel moisture, vegetation recovery, burn severity, and other effects?
- How can these factors affecting fire be mitigated, and how can fuels and management activities increase environmental resilience and reduce the effects of these other factors on cultural and natural resources?
- What fire behavior models can be used to support fire management and fuels treatment planning in the course of the conduct the EA and in implementation at the local level to reduce uncertainty associated fire management and other interacting factors?
- What fire and fuels monitoring activities will be conducted to determine program implementation success at local and national levels?
- To what extent will fuels reduction and management activities be coordinated with

neighboring land management agencies to accomplish synergies in fire risk reduction and resilience restoration?
- What new science and tools are needed to address the gaps in accomplishing program goals?

I am also providing a couple links to documents that may be helpful in addressing these questions and developing a programmatic EA. The USGS Wildland Fire Science Strategic Plan does discuss some of these issues at a national scale and includes appropriate references. I have also included link to our 12-year compendium of wildland fire science produced at USGS (searchable and has links to all 900 plus citations).

U.S. Geological Survey wildland fire science strategic plan, 2021–26 (usgs.gov)

Characterizing 12 years of wildland fire science at the U.S. Geological Survey: Wildland Fire Science Publications, 2006–17 (usgs.gov)

I hope this input is helpful. Please let me know if I can be of further assistance.

Sincerely,

Paul

Paul F. Steblein
Wildland Fire Science Coordinator
US Geological Survey, Ecosystems
12201 Sunrise Valley Dr., Rm 4A426
Reston, VA 20192

W: [redacted]
M: [redacted]
E: [redacted]
URL: https://www.usgs.gov/fire

B.6.3 Federal Emergency Management Agency

United States Fire Administration
U.S. Department of Homeland Security
16825 South Seton Avenue
Emmitsburg MD 21727-8998

FEMA

June 16, 2023

Julianne Turko,
Air Force Civil Engineer Center, NEPA Division
2261 Hughes Ave, Suite 155
Lackland AFB, TX 78235-9853

Dear Ms. Turko,

Thank you for the correspondence regarding Programmatic Environmental Assessment hazardous fuels management activities on Air Force managed lands. As you may know, the U.S. Fire Administration (USFA)'s mission is to support and strengthen fire and emergency medical services and stakeholders to prepare for, prevent, mitigate, and respond to all hazards. However, USFA does not have subject matter expertise nor authority for review or compliance under the National Environmental Policy Act. I have routed the correspondence addressed to me and Deputy Fire Administrator Tonya Hoover to the FEMA Office of Environmental Planning and Historic Preservation (OEHP) for further consideration or action, if needed.

The USFA appreciates the work of the Department of Defense agencies, including the US Air Force, for its wildfire risk management and reduction efforts especially given that the DOD is one of the largest land managers in the nation.

Sincerely,

Lori Moore-Merrell

Lori Moore-Merrell, DrPH, MPH
U.S. Fire Administrator
U.S. Fire Administration

cc: Donna Defrancesco, Assistant Administrator, OEHP, Resilience
Robert Adams, Deputy Director (acting), OEHP, Resilience

B.7 PUBLIC COMMENT LETTER

[redacted]

March 5th, 2024

Attn. Programmatic EA for Reduction and Management of Fuels. I am commenting on this subject above. I think it is beneficial in concept. I hope you are able to continue work on this subject issues in to the future. We really need to focus on a better world for our prosterity. I also would like any and more information available to me on this subject. I am the Grass Roots "Independent Peace Party" In America I am a Presidential Canidate. I hope to be on November Ballot this year 2024; Be looking for me. Any contribution funding or other can be shared at the above Name and address. Looking forward to hearing more from you all. God Bless our "Air Force" and all Vets In America USA. I love you.

Sincerely,

[redacted]

APPENDIX C - EQUIPMENT LIST

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APPENDIX C EQUIPMENT LIST

Table C-1 shows a range of possible equipment that is available within each region. Equipment listed constitutes a representative list of utilized items as of February 2023. Equipment commonly moves between locations based on individual project needs. Additional similar equipment is commonly rented or borrowed from installation Civil Engineering (Natural Resource and Fire and Emergency Service Programs) to supplement equipment owned and operated by the program directly. As listed equipment reaches the end of its lifespan, it will be replaced with newer similar equipment, although the make and model may change.

Table C-1 List of Equipment by Wildland Support Module

Wildland Support Module	Equipment Type	Make/Model	Quantity
Avon Park AFR	Amphibious Vehicle	Marsh Master Tracked Amphibious Vehicle	1
	Dozer	LGP D5K Dozer	1
	Side by Side UTV	Polaris XP 1000	10
	Skid Steer	299D XHP Skid Steer	1
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer Attach	Pallet Fork Skid Steer Attach	2
	Skid Steer Attach	Brush Hog Skid Steer Attach	2
	Skid Steer Attach	Skid Steer Grapple Bucket	2
	Skid Steer Attach	Bobcat Mulching Head Attachment	2
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	2
	Trailer	Load Trail 16' Car hauler W/Sides	2
	Trailer	16' Haulmark Enclosed Trailer	1
	Trailer	Load Trail 25' Gooseneck Trailer	2
	Vehicle	Freightliner HX620 Transport Truck	2
	Vehicle	Ford F-550	5
	Vehicle	Chevy 5500	1
	Vehicle	Ford F-350	3
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Barksdale AFB	ATV	Honda Four Trax Rancher	4
	Dozer	LGP D3K Dozer	1
	Excavator	Cat 250G with Mulching Head	1
	Side by Side ATV	Polaris XP 1000	4
	Skid Steer	ASV RT 135F	1
	Skid Steer	Bobcat T770	1
	Skid Steer Attach	DFM Rotary Turbo Mulcher	1
	Skid Steer Attach	Brush Hog	1
	Skid Steer Attach	Grapple Bucket	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Barksdale AFB *(continued)*	Trailer	Load Trail 12' Car Hauler Trailer	2
	Trailer	16' Haulmark Enclosed Trailer	1
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Vehicle	Chevy 5500	1
	Vehicle	Ford F-350	2
	Vehicle	Ford F-550	2
	Vehicle	Freightliner HX620 Dozer Transport	1
	Vehicle	Semi Tractor with 40' Lowboy trailer	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Beale AFB	Dozer	LGP D6K Dozer	1
	Excavator	Cat 250G with Mulching Head	1
	Side by Side UTV	Polaris XP 1000	4
	Skid Steer	Bobcat Skid Steer T870	2
	Skid Steer	ASV RT 135F	1
	Skid Steer Attach	Brush Hog	2
	Skid Steer Attach	Pallet Fork	1
	Skid Steer Attach	Grapple Bucket	2
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	Load Trail 16' Car hauler W/Sides	2
	Trailer	Load Trail 12' Car Hauler Trailer	1
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Trailer	30' Haulmark Enclosed Trailer	1
	UTV Skid Unit	Wildland Warehouse L Shape 50 Gallon	2
	Vehicle	Chevy 5500 HD	1
	Vehicle	Ford F-350	1
	Vehicle	Ford F-550	2
	Vehicle	Dodge RAM 3500	1
	Vehicle	Semi Tractor with 40' Lowboy trailer	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Cheyenne Mountain SFS	Skid Steer Attach	Pallet Fork	1
	ATV	TRX420FM1N	2
	Excavator	Cat 250G with Mulching Head	1
	Limb Chipper	BC1000XL	1
	Side by Side UTV	6X6 800	1
	Side by Side UTV	Polaris XD 900	1
	Side by Side UTV	Polaris XP 1000	4
	Skid Steer	ASV RT-135	1

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Cheyenne Mountain SFS *(continued)*	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer Attach	Bobcat Mulching Head	1
	Skid Steer Attach	Brush Hog	1
	Skid Steer Attach	Bucket	1
	Skid Steer Attach	Skid Steer Grapple Bucket	2
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	30' Haulmark Enclosed Trailer	1
	Trailer	Load Trail 12' Car Hauler Trailer	1
	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Trailer	Haulmark 30' Enclosed Trailer	1
	UTV Skid Unit	Wildland Warehouse L Shape 50 Gallon	5
	Vehicle	Chevy 2500	1
	Vehicle	Chevy 3500 Dually	1
	Vehicle	Dodge 3500	1
	Vehicle	Ford F-350	2
	Vehicle	Ford F-450	1
	Vehicle	Ford F-550	2
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Eglin AFB	ATV	Honda Four Trax 570 ATV	3
	ATV	Honda Four Trax 500 ATV	8
	Dozer	LGP D5K Dozer	4
	Excavator	Excavator Cat 250G with Mulching Head	2
	Side by Side UTV	Polaris XD 900	5
	Side by Side UTV	Polaris XP 1000	12
	Skid Steer	Bobcat Skid Steer T870	2
	Skid Steer	ASV RT 135F	2
	Skid Steer Attach	Bobcat Mulching Head Attachment	3
	Skid Steer Attach	Skid Steer Grapple Bucket	2
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	2
	Trailer	Load Trail 10' Car Hauler W/Sides	6
	Trailer	Haulmark 16' Enclosed Trailer	1
	Trailer	Load Trail 20' Car Hauler W/Sides	2
	Trailer	Haulmark 30' Enclosed Trailer	1
	UTV Skid Unit	Wildland Ware House L Shape 50 Gallon	1
	Vehicle	Freightliner HX620 Transport Truck	8
	Vehicle	Ford F-350	11

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Eglin AFB *(continued)*	Vehicle	Ford F-450	1
	Vehicle	Ford F-550	3
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Ellsworth AFB	Limb Chipper	Vermeer BC1000XL	1
	Side by Side UTV	Polaris ACE 900 XC	1
	Side by Side UTV	Polaris Pro XD Diesel	1
	Side by Side UTV	Polaris XP 1000	2
	Skid Steer	ASV RT 135F	1
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer Attach	Brush Hog	2
	Skid Steer Attach	Bucket	1
	Skid Steer Attach	Bobcat Mulcher Head	1
	Skid Steer Attach	Grapple Bucket	1
	Skid Steer Attach	Pallet Fork	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	25' Enclosed haulmark	1
	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Vehicle	Ford F-350	2
	Vehicle	Ford F-550	2
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Joint Base Charleston	Amphibious Vehicle	Mud Ox XL Tracked Vehicle	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Vehicle	Ford F-550	3
	Vehicle	Ford F-350	2
	Vehicle	Freightliner Transport Truck	1
	Vehicle	2000 Gallon Tactical Water Tendor	1
	Trailer	25' Enclosed Haulmark Trailer	1
	Trailer	Load Trail 16' Car hauler W/Sides	3
	Side by Side UTV	Polaris XP 1000	4
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer	ASV RT 135F	1
	Skid Steer Attach	Brush Hog	1
	Skid Steer Attach	Pallet Fork	1
	Excavator	Excavator Cat 250G with Mulching Head	1
	Dozer	LGP D5K Dozer	1

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Joint Base Elmendorf Richardson	Amphibious Vehicle	Marsh Master Tracked Amphibious Vehicle	1
	Dozer	LGP D3K Dozer	1
	Excavator	Cat 250G with Mulching Head	1
	Feller Buncher	John Deere 608	1
	Side by Side UTV	Polaris XP 1000	5
	Skid Steer	ASV RT 135F	1
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer	Bobcat Skid Steer T870	1
	Skid Steer Attach	DFM Turbo Mulcher	1
	Skid Steer Attach	Bobcat Mulching Head Attachment	2
	Skid Steer Attach	DFM Skid Steer Feller Buncher	1
	Skid Steer Attach	Grapple Bucket	3
	Skid Steer Attach	Pallet Fork	2
	Timber Harvester	John Deere 1170	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	Felling Tilt Trailer	1
	Trailer	Load Trail 12' Car Hauler Trailer	1
	Trailer	20' Enclosed Haulmark Trailer	1
	Trailer	Load Trail 16' Car hauler W/Sides	2
	Trailer	Load Trail 25' Gooseneck Trailer	1
	UTV Skid Unit	Wildland Warehouse L Shape 50 Gallon	2
	Vehicle	Semi Tractor with 40' Lowboy trailer	1
	Vehicle	Chevy 5500	1
	Vehicle	Chevy 3500 Heavy Duty	1
	Vehicle	Chevy K3500	1
	Vehicle	F-350 SuperDuty	1
	Vehicle	Ford F550	2
	Vehicle	Freightliner HX620 Transport Truck	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Joint Base McGuire Dix-Lakehurst	ATV	King Quad 500AXI	2
	Dozer	D3K LGP	1
	Side by Side UTV	Polaris XP 1000	6
	Skid Steer	ASV RT135F	1
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer Attach	Diamond Mower Rotary Mulcher	1
	Skid Steer Attach	Brush Hog Skid	2
	Skid Steer Attach	Grapple Bucket	1

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Joint Base McGuire Dix-Lakehurst *(continued)*	Skid Steer Attach	Bobcat Mulching Head Attachment	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	Load Trail 10' Car Hauler w/ Sides	1
	Trailer	Load Trail 16' Car hauler W/Sides	3
	Trailer	Load Trail 25' Gooseneck Trailer	1
	UTV Skid Unit	Wildland Warehouse L Shape 50 Gallon	2
	Vehicle	Semi Tractor with 40 Ft Lowboy trailer	1
	Vehicle	Ford F-450	1
	Vehicle	Chevy 5500	1
	Vehicle	Ford F-350	2
	Vehicle	Ford F-450	1
	Vehicle	Freightliner HX620 Dozer Transport	2
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
	Excavator	Excavator Cat 250G with Mulching Head	1
	Trailer	Haulmark 30' Enclosed Trailer	1
Joint Base San Antonio – Lackland	Side by Side UTV	Polaris XP 1000	5
	Skid Steer	ASV RT 135F	1
	Skid Steer	Bobcat T770	1
	Skid Steer Attach	Bobcat Mulching Head	2
	Skid Steer Attach	Brush Hog	2
	Skid Steer Attach	Grapple Bucket	2
	Skid Steer Attach	Pallet Fork	2
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	Load Trail 12' Car Hauler Trailer	1
	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Trailer	30' Haulmark Enclosed Trailer	1
	Vehicle	Chevy 5500	1
	Vehicle	Ford F-350	3
	Vehicle	F-550	2
	Vehicle	Freightliner HX620 Transport Truck	1
	Vehicle	Ram 2500	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Kirtland AFB	Dozer	LGP D3K Dozer	1
	Excavator	Cat 250G with Mulching Head	1
	Side by Side UTV	Polaris XP 1000	5
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer	Bobcat Skid Steer T770	1

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Kirtland AFB *(continued)*	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer	ASV RT 135F	1
	Skid Steer Attach	Bobcat Mulching Head Attachment	1
	Skid Steer Attach	Bobcat Mulching Head Attachment	1
	Skid Steer Attach	Brush Hog	3
	Skid Steer Attach	DFM EV60 Mulcher Head	1
	Skid Steer Attach	DFM Skid Steer Feller Buncher	1
	Skid Steer Attach	Grapple Bucket	3
	Skid Steer Attach	Pallet Fork	3
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	Load Trail 12' Car Hauler Trailer	1
	Trailer	16' Haulmark Enclosed Trailer	1
	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	Load Trail 25' Gooseneck Trailer	1
	UTV Slip On	Wildland Warehouse L Shape 50 Gallon	4
	Vehicle	F-350	3
	Vehicle	F-550	3
	Vehicle	Semi Tractor with 40' Lowboy trailer	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
	Feller Buncher	John Deere 608	1
	Timber Harvester	John Deere 1170	1
Mountain Home AFB	Excavator	Cat 250G with Mulching Head	1
	Feller Buncher	John Deere 608	1
	Side By Side	Polaris XP 1000	5
	Side by Side Attach	Koplin UTV Snow Plow	1
	Skid Steer	ASV RT 135F	1
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer	Bobcat Skid Steer T870	1
	Skid steer Attach	DFM EV-60 Turbo Mulcher	2
	Skid steer Attach	DFM Turbo Saw	1
	Skid steer Attach	Pallet Fork	2
	Skid steer Attach	Brush Hog	2
	Skid steer Attach	Bucket	2
	Skid steer Attach	Grapple Bucket	2
	Timber Harvester	John Deere 1170	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	30' Haulmark Enclosed Trailer	1
	Trailer	Load Trail 25' Gooseneck Trailer	1

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Mountain Home AFB *(continued)*	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	16' Haulmark Enclosed Trailer	1
	UTV Skid Unit	Wildland Warehouse L Shape 50 Gallon	2
	Vehicle	Chevy 3500 HD	1
	Vehicle	Ford F-350	1
	Vehicle	Ford F-550	2
	Vehicle	Chevy 5500	1
	Vehicle	Freightliner HX620 Transport Truck	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Nellis AFB	Excavator	Cat 250G with Mulching Head	1
	Limb Chipper	Bandit 15XPC	1
	Side by Side UTV	Polaris XP 1000	4
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer	ASV RT 135F	1
	Skid Steer Attach	Bobcat Mulching Head Attachment	2
	Skid Steer Attach	Brush Hog	2
	Skid Steer Attach	Grapple Bucket	2
	Skid Steer Attach	Pallet Fork	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	Load Trail 14' Car Hauler W/Sides	1
	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Trailer	30' Haulmark Enclosed Trailer	1
	Vehicle	Ford F-350	2
	Vehicle	Ford F-550	2
	Vehicle	Freightliner HX620 Transport Truck	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Shaw AFB	Dozer	LGP D5K Dozer	
	Excavator	Cat 250G with Mulching Head	1
	Side by Side UTV	Polaris XP 900	2
	Skid Steer	Bobcat T770	1
	Skid Steer	Cat 299D2 XHP	1
	Skid Steer Attach	Bobcat Mulching Head	2
	Skid Steer Attach	DFM Feller Buncher	1
	Skid Steer Attach	Frontier Box Blade	1
	Skid Steer Attach	Brush Hog	2
	Skid Steer Attach	Grapple Bucket	2
	Skid Steer Attach	Pallet Fork	1

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Shaw AFB *(continued)*	Trailer	Load Trail 16' Car hauler W/Sides	2
	Trailer	16' Haulmark Enclosed Trailer	1
	Vehicle	Ford F-550	2
	Vehicle	Ford F-350	3
	Vehicle	Freightliner HX620 Dozer Transport	2
Tyndall AFB	ATV	Can Am Outlander	2
	Dozer	LGP D5K Dozer	1
	Excavator	Cat 250G with Mulching Head	1
	Side by Side UTV	Polaris XP 1000	4
	Skid Steer	ASV RT 135F	1
	Skid Steer	Bobcat Skid Steer T770	1
	Skid Steer Attach	Bobcat Mulching Head Attachment	2
	Skid Steer Attach	Brush Hog	1
	Skid Steer Attach	Skid Steer	1
	Skid Steer Attach	Pallet Fork	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Trailer	Load Trail 16' Car hauler W/Sides	4
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Vehicle	Ford F-350	3
	Vehicle	F-550	1
	Vehicle	Freightliner HX620 Dozer Transport	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
Vandenberg AFB	Trailer	30' Haulmark Enclosed Trailer	1
	Excavator	Cat 250G with Mulching Head	1
	Wheeled Mulcher	300 HP Barko Wheeled Dedicated Mulcher	1
	Tracked Mulcher	300 HP Gyro-Track Dedicated Mulcher	1
	Skid Steer	ASV RT 135F	1
	Dozer	LGP D6K Dozer	1
	Vehicle	Semi Tractor with 40 Ft Lowboy trailer	1
	Vehicle	Ford F-550	3
	Skid Steer	Bobcat Skid Steer T770	4
	Trailer	Load Trail 16' Car hauler W/Sides	1
	Trailer	Load Trail 20' Car Hauler W/Sides	2
	Trailer	Load Trail 25' Gooseneck Trailer	1
	Vehicle	Chevy 3500 Heavy Duty	1
	Vehicle	Ford F-350	2
	ATV	grizzly 550	2
	Side by Side UTV	Polaris XP 1000	5

Table C-1 List of Equipment by Wildland Support Module (continued)

Wildland Support Module	Equipment Type	Make/Model	Quantity
Vandenberg AFB *(continued)*	Vehicle	Ram 3500	1
	Skid Steer Attach	Grapple Bucket	4
	Skid Steer Attach	Pallet Fork	4
	Vehicle	Freightliner HX620 Dozer Transport	4
	UTV Skid Unit	Wildland Warehouse L Shape 50 Gallon	3
	Skid Steer Attach	Bobcat Mulching Head	4

Notes:
Source: Air Force Wildland Fire Branch, 2022
AFB = Air Force Base; AFR = Air Force Range: SFS = Space Force Station

APPENDIX D - RESOURCE DEFINITIONS AND TIERING THRESHOLDS

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APPENDIX D RESOURCE DEFINITIONS AND TIERING THRESHOLDS

Resource definitions and tiering thresholds are provided for each resource. As described in **Chapter 5** of the main document, tiering refers to the coverage of general matters in broader National Environmental Policy Act (NEPA) documents (such as national program or policy statements) with subsequent narrower statements or environmental analyses (such as regional or basin-wide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on issues specific to the statement subsequently prepared. The tiering thresholds are provided as guidance for installations to consider when evaluating the need for additional site-specific analyses. For all resources the site-specific review would also include consideration of the potential for location-specific cumulative effects, which could require additional NEPA analysis even in the absence of any other triggers.

D.1 BIOLOGICAL RESOURCES

D.1.1 Definition of Resource

Biological resources include native or nonnative plants and animals and the habitats where they exist. Plant associations are generally referred to as vegetation, and animal species are generally referred to as wildlife. Habitat is defined as the resources and conditions present in an area that support a plant or animal such as grasslands, forests, and wetlands. Fish and wildlife include the species that occupy, breed, forage, rear, rest, hibernate, or migrate through the project area. Protected species are those with state or federal legal protection such as those listed as threatened or endangered under the Endangered Species Act (ESA), and migratory birds protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA).

D.1.2 Tiering Thresholds

The installation-level natural resources manager would be included in the environmental project planning review process for all proposed fuels treatments. Each installation would evaluate implementation of the activities on a case-by-case basis and consult with the US Fish and Wildlife Service and/or National Marine Fisheries Service under Section 7 of the ESA if necessary. If the proposed activities could have effects (adverse or beneficial) on any of the following, then site-specific NEPA analysis and agency consultation may be required:

- Potential effects on habitats designated as critical habitat under the ESA.
- Potential effects on species with state or federal legal protection, such as those listed as threatened or endangered under the ESA.
- Potential effects on birds protected under the MBTA and BGEPA.
- Potential for location-specific cumulative effects.

If the site-specific review determines that the severity, extent, or duration of potential effects on biological resources would exceed the effects described here, or is not addressed in this document, additional analysis and planning would be conducted to modify the proposed treatment method to prevent or minimize adverse effects to the extent practicable and ensure that the Proposed Action would have no or less than significant adverse effects on biological resources. Any required mitigation measures will be identified at a site-specific level and documented. The site-specific analysis would be tiered to this Programmatic Environmental Assessment (PEA) to provide full NEPA analysis.

D.2 WATER RESOURCES

D.2.1 Definition of Resource

Water resources include surface water, groundwater, wetlands, aquifers, stormwater drainage, and floodplains. Surface water resources include lakes, rivers, and streams, and are important for a variety of reasons, including economic, ecological, recreational, and human health factors. Groundwater is water beneath the earth's surface, used for drinking, irrigation, and industrial purposes. Wetlands are jointly defined by the US Environmental Protection Agency (USEPA) and US Army Corps of Engineers (USACE) and include swamps, marshes, bogs, sloughs, and vernal pools. Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. The coastal zone includes coastal areas and coastal waters extending to the limits of state lands and adjacent shorelines and inland lands necessary to control shorelines

Surface waters in the United States are protected under the Clean Water Act (CWA) (33 United States Code [U.S.C.] 1251 et seq.), the goal of which is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA regulates discharges of pollutants into surface Waters of the United States (WOTUS). Jurisdictional waters, including surface water resources as defined in 40 Code of Federal Regulations (CFR) § 230.3(s), are regulated under § 303(c), 303(d), 311, 401, 402 and 404 of the CWA, and § 9 and 10 of the Rivers and Harbors Act. The CWA establishes federal limits, through the National Pollutant Discharge Elimination System permit process, for regulating point (end of pipe) and nonpoint (e.g., stormwater) discharges of pollutants into the WOTUS and quality standards for surface waters. The term WOTUS has a broad meaning under the CWA and incorporates deep water aquatic habitats and special aquatic habitats (including wetlands). The USEPA and USACE are interpreting WOTUS consistent with the January 2023 Rule; Conforming, in 23 states. The remaining 27 states are interpreting WOTUS consistent with the pre-2015 regulatory regime and the Supreme Court's decision in *Sackett v. Environmental Protection Agency* pending litigation.

Stormwater is surface water generated by precipitation events that may percolate into permeable surficial sediments or flow across the top of impervious or saturated surficial areas, a condition known as runoff. Stormwater is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade surface waters, such as lakes, rivers, or streams. Proper management of stormwater flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics.

Groundwater includes the subsurface hydrologic resources of the physical environment; its properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition. Groundwater is important for both humans and wildlife. Approximately 40 percent of water used for public supplies, and about 39 percent of water used for agriculture in the United States is sourced from groundwater (USGS, 2022). Groundwater is stored in both confined and unconfined aquifers and can flow to the surface in the form of springs. Aquifers are regulated under the Safe Water Drinking Act of 1974 (42 U.S.C. § 300f et seq.). The USEPA defines sole source aquifers are aquifers as those that supply at least 50 percent of the drinking water for their service areas and, if contaminated, no reasonably available alternative drinking water sources exist.

Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR Part 328) and are "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions" (USACE Environmental Laboratory, 1987). Wetlands improve water quality, assist in groundwater recharge, provide natural flood control, assist in trapping sediment, and may also support a wide variety of fish, wildlife, and plants. Wetlands are considered sensitive habitats and are subject to federal regulatory authority under Sections 401 and 404 of the CWA and Executive Order (EO) 11990, Protection of Wetlands. Federal agencies are required by EO 11990 to adopt a policy to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction and modification of wetlands. In addition to regulation by USACE, states may implement their own environmental quality standards for activities that may impact wetlands.

Floodplains are defined by EO 11988, Floodplain Management, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year." Furthermore, floodplains include areas of low, level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation by rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and provision of habitat for a diversity of plants and animals. To minimize the risk of damage associated with these areas, EO 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development unless it is the only practicable alternative. In addition, EO 14030, *Climate-Related Financial Risk*, which reinstated the previously rescinded EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, established a federal flood risk management standard as well as a process for soliciting and considering stakeholder input regarding impacts to floodplains. Under EO 14030, federal actions impacting floodplains require solicitation of comments from the public. Flood potential is generally evaluated by the Federal Emergency Management Agency. The 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year, or a flood event in the area once every 100 years. The 500-year floodplain is an area within which there is a 0.2 percent chance of inundation by a flood event in a given year, or a flood event in the area once every 500 years. The likelihood of a 100-year or 500-year flood event is based on historical hydrology; future flood flows may be more or less frequent. Risk of flooding is influenced by local topography, the frequencies of precipitation events, the size of the watershed above the floodplain, and upstream development.

The coastal zone, as defined by the Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. Parts 1451–1465), includes "coastal waters extending to the outer limit of state submerged land title and ownership, adjacent shorelines, and land extending inward to the extent necessary to control shorelines." The coastal zone also refers to islands, transition and intertidal areas, salt marshes, wetlands, and beaches. Section 307 of the CZMA provides states with the authority to offer input in federal agency decision making for activities potentially affecting coastal uses or resources. This federal consistency provision provides authority to the states that would not otherwise be authorized through other federal programs. Federal actions that are likely to affect any land or water use or natural resource of the coastal zone must be consistent with the enforceable policies of the state's Coastal Zone Management Plan. As a federal agency, the Department of the Air Force (DAF) is required to determine whether its proposed activities would affect the coastal zone. At the installation level, this action takes the form of a consistency determination, a negative determination, or a determination that no further action is necessary.

D.2.2 Tiering Thresholds

Tiering would be required if the Proposed Action would adversely affect any of the following water resources:

- Floodplain
- WOTUS
- Coastal zone resources (preparation of a coastal zone consistency determination submitted to the National Oceanic and Atmospheric Administration – Office for Coastal Management would be required)
- Herbicide use in sensitive habitats, near groundwater, aquifers

Additional NEPA analysis may also be required if there is the potential for location-specific cumulative effects.

D.3 EARTH RESOURCES

D.3.1 Definition of Resource

Earth resources consist of the earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of geology, topography and soils, and geologic hazards and paleontology, when applicable. Geology, topography, geologic hazards, and paleontology would not be affected by fuels treatments.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils are typically described in terms of their type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. Soil formation is a continuous process that is ultimately determined by the parent geologic material and the influence of factors such as climate, topography, and vegetation. The susceptibility of the soil to erosion depends on several factors including, but not limited to, soil texture, saturation point, and slope. Soil erodibility generally decreases with increasing clay and organic matter content, whereas uniform silts and sands tend to have high soil erodibility.

D.3.2 Tiering Thresholds

Evaluating soil resources specific to an installation and understanding applicable federal and state laws and regulations would guide decisions on the type of management actions that should be taken and what regulations need to be followed.

Tiering would be required if the Proposed Action would adversely affect any of the following earth resources:

- Areas with highly erodible soils or planning a high severity fire in organic soils.
- Environments where threatened and endangered plant species depend on soil nutrients and structures in fire-maintained areas.
- Planning a high-severity fire could result in severe adverse effects to soil; installations would be required to conduct a NEPA analysis on soil effects.

Additional NEPA analysis may also be required if there is the potential for location-specific cumulative effects.

D.4 Cultural Resources

D.4.1 Definition of Resource

Cultural resources are any prehistoric or historic districts, sites, buildings, structures, or objects considered important to a culture or community for scientific, traditional, religious, or other purposes. These resources are protected and identified under several federal laws and EOs.

Cultural resources include the following subcategories:

- Archaeological (prehistoric or historic sites where human activity has left physical evidence of that activity, but no structures remain standing);
- Architectural (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); and
- Traditional Cultural Properties (resources of traditional, religious, or cultural significance to Native American tribes and other communities).

Section 106 of the National Historic Preservation Act (NHPA) requires all federal agencies to seek to avoid, minimize, or mitigate adverse effects on historic properties (36 CFR § 800.1[a]). Significant cultural resources are called historic properties and are listed on the National Register of Historic Places (NRHP) or have been determined to be eligible for listing. To be eligible for the NRHP, historic properties must be 50 years old and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. They must possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association to convey their historical significance, and meet at least one of four criteria (National Park Service, 1997):

- Associated with events that have made a significant contribution to the broad patterns of our history (Criterion A);
- Associated with the lives of persons significant in our past (Criterion B);
- Embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- Have yielded or be likely to yield information important in prehistory or history (Criterion D).

Properties that are less than 50 years old can be considered eligible for the NRHP under Criterion G (properties that have achieved significance within the past 50 years) if they possess exceptional historical importance. Those properties must also retain historic integrity and meet at least one of the four NRHP Criteria for Evaluation (Criterion A, B, C, or D). The term "Historic Property" refers to National Historic Landmarks, NRHP-listed, and NRHP-eligible cultural resources.

Federal laws protecting cultural resources include the Archaeological and Historic Preservation Act of 1960 as amended, the American Indian Religious Freedom Act of 1978, the Archaeological Resources Protection Act of 1979, the Native American Graves Protection and Repatriation Act of 1990, and the NHPA, as amended through 2016, and associated regulations (36 CFR Part 800). The NHPA requires federal agencies to consider effects of federal undertakings on historic properties prior to deciding on or taking an action and to integrate historic preservation values into their decision-making process. Federal agencies fulfill this requirement by completing the Section 106 consultation process, as set forth in 36 CFR Part 800. Section 106 of the NHPA also requires agencies to consult with federally recognized Indian tribes with a vested interest in the undertaking.

D.4.2 Tiering Thresholds

The installation-level cultural resources manager would be included in the environmental project planning review process for all proposed fuels treatments. Each installation would evaluate implementation of the activities on a case-by-case basis and implement Section 106 consultation as necessary to identify historic properties potentially affected by the undertaking, assess potential effects, and seek ways to avoid, minimize or mitigate any adverse effects on historic properties. The site-specific analysis would then be tiered to this PEA to provide a complete NEPA analysis. Broadly, circumstances for tiering include:

- Areas identified for any fuels reduction strategy that have not been previously surveyed for cultural resources.
- Areas identified for fuels reduction strategies that include NRHP-eligible or unevaluated cultural resources.
- Potential for location-specific cumulative effects.

As noted above, any required mitigation measures would be identified at the site-specific level and developed as part of the Section 106 consultation process in coordination with the SHPO, Tribal Historic Preservation Office (THPO), federally recognized tribal governments, and other stakeholders as appropriate.

D.5 HUMAN HEALTH AND SAFETY

D.5.1 Definition of Resource

Human health and safety (HH&S) addresses conditions that potentially pose risks or threats to the health, safety, and general well-being of workers and employees engaged in occupational activities; bystanders or other members of the public who could be directly or indirectly affected by those activities; and measures, procedures, and practices to prevent or optimally minimize those risks and threats.

At this programmatic level of analysis, the types of potential effects on HH&S from the proposed fuels treatment activities would be the same or similar within all five fire regime groups (FRGs).

Site-specific health and safety planning would be conducted prior to performing fuels treatment activities at each DAF installation. Additional analysis of HH&S risks would be conducted if this site-specific planning identifies potential adverse effects on HH&S that are not identified in this PEA, or if such effects would exceed (would be worse than) those described in this PEA (see **Section 3.4.5.3** and **Chapter 5**).

D.5.2 Tiering Thresholds

The DAF would identify and incorporate measures to prevent or minimize potential risks to the health and safety of workers conducting the proposed fuels treatments as well as on-base and off-base populations during site-specific planning procedures that would be conducted before each treatment would be implemented. The DAF would conduct additional detailed analysis of HH&S risks if the initial planning process identified potential adverse effects on HH&S that are not identified in this PEA, or if such effects would exceed (would be worse than) those described in this PEA. Based on this analysis, additional measures to prevent or optimally minimize potential adverse effects would be incorporated into the fuels treatment method as needed. A proposed treatment activity would not be conducted if potential risks to HH&S could not be prevented or optimally minimized to the extent feasible. Any required mitigation measures will be identified at a site-specific level and documented. The site-specific analysis would be tiered to this PEA to provide a complete NEPA analysis. Additional NEPA analysis may also be required if there is the potential for location-specific cumulative effects.

D.6 AIR QUALITY

D.6.1 Definition of Resource

Ambient air quality in a specified area or region is measured by the concentration of various pollutants in the atmosphere. Pollutant concentrations are affected by the amount of pollutants in the ambient air and the extent to which these pollutants can be transported and diluted.

D.6.2 Tiering Thresholds

Significance Thresholds or Indicators

For the PEA, air quality impact findings are based on potential impacts from proposed projects whose activities are similar to those of the Proposed Action. If fuels treatment activities proposed for implementation at DAF installations would (or are predicted to) result in criteria pollutant (and precursor) emissions greater in magnitude, extent, or duration than those described in this PEA, additional analysis may be required before a proposed action project is implemented.

For example, a finding of significant impact on air quality may be appropriate if emissions from fuels treatment have the potential to exceed daily or annual regulatory thresholds (in tons per day or tons per year) and, therefore, result in, or contribute to, ambient concentrations that exceed the National Ambient Air Quality Standards (NAAQS). The conformity *de minimis* levels are useful as NEPA analysis screening thresholds to determine significance for nonattainment and maintenance criteria pollutants. Mitigation measures would be identified for projects that may have a significant impact on air quality and strategies for potential emissions reductions would be assessed and documented in a tiered NEPA document.

Installation-specific NEPA Analysis

Fuels reduction and treatment activities are routinely conducted on vegetations across DAF installations. Proposed actions involving prescribed burns only, or prescribed burns carried out in conjunction with mechanical and chemical fuels treatments, must comply with NEPA requirements.

To comply with NEPA, installation-specific analyses are conducted in accordance with the Air Force Environmental Impact Analysis Process (EIAP) Guide and 32 CFR Part 989. The installation NEPA coordinator may be consulted for details related to compliance and documentation. Some proposed actions for fuels reduction and management, including prescribed burning, may meet the criteria for a categorical exclusion from NEPA. Others may need to conduct an EA or prepare an Environmental Impact Statement.

In an installation-specific NEPA analysis, the proposed action activities are evaluated to determine if emissions of criteria pollutants (or their precursors) and greenhouse gases would result in a significant impact to air quality. To evaluate impact, the first step is to estimate the emissions associated with the activities for the proposed action using the DAF's Air Conformity Applicability Model, where possible. The next step is to then compare the estimated emissions against General Conformity *de minimis* values (40 CFR § 93.153) as indicators of potential air quality significance for actions in nonattainment or maintenance areas. Project potential emissions are compared against prevention of significant deterioration (PSD) major source thresholds for stationary source permitting (40 CFR § 52.21) as indicators of potential significance in attainment areas, where General Conformity is not applicable. Proposed projects are significant for air quality if emissions estimated for the project are found to exceed the *de minimis* or regulatory thresholds. Additional NEPA analysis may also be required if there is the potential for location-specific cumulative effects.

D.7 NOISE

D.7.1 Definition of Resource

Noise is sound that is unwanted or objectionable because of loudness, pitch, or duration. The common human reaction to noise is annoyance; however, excessive noise may interfere with multiple daily activities, including conversation, entertainment, and sleep. In extreme cases, noise may cause physical discomfort or hearing damage. Noise may also affect animals and disturb their feeding or breeding patterns.

Sensitive noise receptors are land uses that may have an increased sensitivity to loud or excessive noise because of their setting or character, the activities typically occurring or being performed there, or the age or physical condition of their human occupants. Such land uses include residential developments, hotels, hospitals, nursing homes, educational facilities, and libraries. Commercial, industrial, and office land uses are not considered sensitive noise receptors.

Noise levels are usually measured and expressed in decibels (dB) that are weighted to better reflect human hearing (A-weighted sound level [dBA]). Most people are exposed to sound levels of 50 to 55 dBA or higher on a daily basis. The day/night noise level (DNL) accounts for the increased annoyance of some noise events occurring between 10:00 p.m. and 7:00 a.m. by adding a 10-dB "penalty" to the average A-weighed noise level measured during a 24-hour day.

Noise levels on and around DAF installations are modeled frequently to determine the potential effects on nearby communities from noise associated with airfield operations. Most off-base land uses are considered compatible with operational noise levels below the 65 dBA DNL sound level, as defined in Air Force Handbook 32-7084, *AICUZ Program Manager's Guide* (November 2017). Noise levels that exceed 65 dBA DNL may result in human annoyance and potential land use incompatibilities. The DAF develops Air Installations Compatible Use Zones (AICUZ) Studies in cooperation with local communities to inform them of operational noise associated with DAF installations and help minimize adverse effects from such noise on off-base land uses.

D.7.2 Tiering Thresholds

Tiering would be required if the Proposed Action would adversely affect any of the following noise resources:

- Individual installations would determine whether there are any noise-sensitive receptors in the vicinity of the Proposed Action.
- If the Proposed Action would result in excessive noise creation, such as combustion of unexploded ordnance, then tiered NEPA would be required.

Additional NEPA analysis may also be required if there is the potential for location-specific cumulative effects.

D.8 Infrastructure

D.8.1 Definition of Resource

In the context of this PEA, "infrastructure" refers to facilities and systems that support the operation of the built environment on and outside DAF-managed lands. These facilities and systems include roads, rail lines, and associated tunnels and bridges; airports and airfields, and associated aircraft navigation equipment; electrical power generation facilities and distribution lines; water and wastewater treatment plants and associated distribution and collection piping; stormwater management facilities; and phone and data switching facilities, transmission lines, and towers. Infrastructure may be located aboveground (e.g., roads or electrical transmission lines) or underground (e.g., water distribution and sewer collection pipes). In developed areas, new and upgraded infrastructure is often planned and constructed on a nearly continuous basis to incorporate new technology and provide sufficient capacity to meet user demand.

D.8.2 Tiering Thresholds

The DAF would identify and incorporate measures to prevent or minimize potential risks to on-base and off-base infrastructure during site-specific planning procedures that would be conducted before each treatment would be implemented. The DAF would conduct additional detailed analysis of risks to infrastructure if the initial planning process identified potential adverse effects that are not identified in this PEA, or if such effects would exceed (would be worse than) those described in this PEA. Based on this analysis, additional measures to prevent or minimize potential adverse effects would be incorporated into the fuels treatment method as needed. A proposed treatment activity would not be conducted if potential risks to on-base or off-base infrastructure could not be prevented or minimized to the extent feasible. Additional NEPA analysis may also be required if there is the potential for location-specific cumulative effects.

D.9 Environmental Justice

D.9.1 Definition of Resource

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (USEPA, 2023). EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (11 February 1994), requires federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. EO 14008, Tackling the Climate Crisis at Home and Abroad (27 January 2021), directs federal agencies to make achievement of environmental justice part of their missions by developing programs, policies, and activities to address the potential for disproportionately high and adverse human health, environmental, climate-related, and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of these impacts.

In the context of NEPA, environmental justice addresses potential effects on historically disadvantaged racial, ethnic, and socioeconomic groups that have often been underrepresented or marginalized in the environmental planning process. Such groups include non-white racial and ethnic minorities, persons with limited English proficiency, individuals and families living in poverty, and the elderly. Environmental justice in NEPA also emphasizes public outreach efforts to engage, inform, and solicit meaningful input from these groups. The *Guide for Environmental Justice (EJ) Analysis Under the Environmental Impact Analysis Process* (DAF, 2020) establishes procedures for identifying environmental justice populations, analyzing potential impacts, and conducting public outreach in support of the NEPA process and DAF EIAP.

At this programmatic level of analysis, potential effects on environmental justice populations would be the same or similar within all FRGs, regardless of the particular FRG where an environmental justice population is located. Potential effects associated with one or more FRGs would be evaluated further if the DAF determines that additional site-specific environmental justice analysis is required before one or more fuels treatments would be implemented at a particular installation (see **Section 3.4.10.2** and **Chapter 5**).

D.9.2 Tiering Thresholds

Before the Proposed Action would be implemented at a particular installation, the DAF (primarily consisting of the Air Force Wildland Fire Branch and installation-level personnel) would consider the potential effects on local populations (regardless of environmental justice status) that could result from each proposed treatment method. If the DAF determines that anticipated effects on individuals or communities resulting from a proposed treatment method could exceed the effects described in **Section 3.4.10.3**, a location-specific environmental justice analysis would be performed in accordance with the *Guide for Environmental Justice (EJ) Analysis Under the Environmental Impact Analysis Process* (DAF, 2020) and other applicable and comparable guidance. If this analysis determines that environmental justice populations would potentially be affected, the DAF would prepare additional documentation to identify those populations, potential effects, and measures that would be implemented to ensure that those effects would not be disproportionately high and adverse. The DAF would also conduct additional public outreach to inform environmental justice populations about the Proposed Action, invite them to participate in the planning process, and give them opportunities to provide meaningful input.

Any required mitigation measures will be identified at a site-specific level and documented. The site-specific analysis would be tiered to this PEA to provide a complete NEPA analysis. Additional NEPA analysis may also be required if there is the potential for location-specific cumulative effects.

D.10 REFERENCES

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APPENDIX E - BIOLOGICAL RESOURCES SUPPLEMENTAL INFORMATION

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APPENDIX E BIOLOGICAL RESOURCES SUPPLEMENTAL INFORMATION

The following subsections provide additional information to support the analysis of effects on biological resources presented in this Programmatic Environmental Assessment (PEA). These sections are organized to align with the subsections of **Section 3.2** of this PEA.

E.1 ADDITIONAL AFFECTED ENVIRONMENT DESCRIPTION – VEGETATION

E.1.1 Fire Regime Group I

Vegetation communities classified as Fire Regime Group (FRG) I occur throughout the United States, but are most prevalent in the Eastern and Central regions. These communities include wide-ranging pine-dominated forests in the Southeast, such as those found at installations from Virginia to central Texas, in the northeast pine barrens, such as those found at Joint Base McGuire-Dix-Lakehurst, and in the Northcentral U.S. in ponderosa pine and mixed conifer forests and woodlands in and around Colorado, such as those found at Cheyenne Mountain Space Force Station (SFS) and the U.S. Air Force (USAF) Academy. The Southeast and Southcentral regions have many hardwood and mixed hardwood pine vegetation communities classified as FRG I, including many riparian and wetland systems. These include coastal plain hardwood forests, mesic and wet hardwood forests and flatwoods, coastal maritime forests, cypress domes, peatland pocosin and canebrakes, streamhead seepage swamp-pocosin-baygall, central and interior floodplain systems, and piedmont, Appalachian, and Ozark-Ouachita dry forests. Less prevalent pine, juniper, and oak communities classified as FRG I are found in southern California at Beale Air Force Base (AFB) and Vandenberg AFB, and central Texas at Randolph and Lackland AFBs. Grasslands, shrublands, and riparian communities classified as FRG I are found at Southcentral installations (Altus AFB, Dyess AFB, Goodfellow AFB, Joint Base San Antonio, Laughlin AFB, Melrose Air Force Range (AFR), Sheppard AFB, and Arnold AFB) in central Texas, Oklahoma, and Tennessee. Small extents of grassland communities classified as FRG I occur at installations in the Northeast and Midwest regions. The Warm Desert Riparian System community that occurs at Southwestern installations Davis-Monthan AFB, Edwards AFB, Luke AFB, Nellis AFB, and Nevada Test and Training Range (NTTR) are classified as FRG I. There are no natural vegetation communities at installations in Alaska that are classified as FRG I.

Ninety-five percent of forest, shrubland, and grassland ecosystems of the Southeastern United States Coastal Plain have been shaped by occurrence of fire (Frost, 1995). Vegetation within these ecosystems has developed adaptation strategies that make them resilient to fire. Adaptations include growing deep roots and thick bark to resist fire effects or fast growth or regeneration during reduced competition following a fire. Longleaf pine (*Pinus palustris*)/wiregrass (*Aristida stricta*) is the most frequently cited example of a fire-adapted Coastal Plain forest ecosystem. Of the estimated 60 to 90 million acres of presettlement forests dominated by longleaf pine in the Southeast, less than 4 million acres of poor-quality second growth longleaf pine forest remain in the region (Harper et al., 1997). Many of these continue to decline as a result of the lack of prescribed fire, or prescribed fire applied at an inappropriate frequency. As a result of extensive habitat management with prescribed fire and other methods, Eglin AFB has many outstanding natural features with the largest contiguous acreage of old-growth longleaf pine in the world and 106 rare or listed plant species (Florida Fish and Wildlife Conservation Commission, 2023).

E.1.2 Fire Regime Group II

Vegetation communities classified as FRG II are most prevalent in the Midwest grasslands, but also occur in the Southeast, South central, and Southwest grasslands, shrublands, and riparian areas. Grassland communities occurring at installations in FRG II include shortgrass, mixed, and tallgrass prairies in the Great Plains and transitional regions, California valley and coastal grasslands, Chihuahuan desert grasslands, inter-mountain basin semi-desert and montane-subalpine grasslands, and Florida Dry Prairie. Installations in the Southeast have several riparian and shrubland communities classified as FRG II, including Florida Peninsula Inland Scrub, Gulf and Atlantic Coastal Plain Tidal Marsh Systems, Floridian Highlands Freshwater Marsh, and South Florida Everglades Sawgrass Marsh. Riparian systems classified as FRG II at installations in other regions include Western Great Plains Depressional Wetland Systems in North Dakota, and Pacific Coastal Marsh Systems in California. Brown and Smith (2000) consider all ecosystem types other than forest and woodland to have stand-replacement fire regimes because most fires either kill or remove most of the aboveground dominant vegetation, even though most belowground plant parts survive, allowing species that sprout to recover rapidly.

E.1.3 Fire Regime Group III

Vegetation communities includes mountain pinyon and juniper woodlands, desert grassland and steppe, a variety of riparian and wetland communities in the Southeast, Northeast, and Northwest, and arid shrublands of the Southwest. In Alaska, the FRG III communities include Mesic Black Spruce Forest, Dry Grassland, Dry Aspen-Steppe Bluff - Lower Elevations, and Riparian Stringer Forest and Shrubland.

Vegetation in FRG III has not historically experienced fire frequently; when fire occurs, severity is mixed. Consequently, these communities are not typically a high fire risk and less likely to need fuels management. However, FRG III has a wide range of historical fire return intervals from 35 years to 200 years. Communities at the shorter historical fire return intervals would be expected to be more resilient to burning than those of longer historical fire return intervals. In the northeast, the communities in FRG III have many similarities to that described for ponderosa pine ecosystems in FRG I (Block et al., 2016), but with a less frequent fire return due to site conditions. Fire suppression has resulted in changes in species composition and a shift in fire regime. Prescribed fire is being used in drier forests of the northwest to return low-severity fire conditions to appropriate forest types (Block et al., 2016). Communities at the longer historical fire return intervals would include wetland systems that would not be conducive to burning where mechanical methods would be more appropriate for fuels management.

Communities included in FRG III include a range of mesic slopes, bluffs, or sheltered ravines and lowland swamps in the eastern gulf and Atlantic coastal plain, where fire is naturally rare. These communities are often protected from most natural fires by steep topography or by surrounding extensive areas of non-flammable vegetation (LANDFIRE, 2007). Typically, these communities are resistant to burning because of the lack of fuels or have high moisture that suppresses fires. However, the major natural dynamic processes for these communities are natural disturbances from hurricanes and major floods that create canopy gaps that trigger regeneration and create habitat diversity. Conducting fuels management in these systems would be performed proportionally to the fire risk. Many are mesic or wetland communities that are expected to have a high fuel load but low probability of fire because of the high moisture content in the vegetation.

E.1.4 Fire Regime Group IV

Vegetation communities classified as FRG IV include a few forest, riparian, and grassland communities, but the majority are shrublands occurring primarily in the arid western U.S. In Alaska, vegetation communities classified as FRG IV include Boreal Treeline White Spruce Woodland, White Spruce-Hardwood Forest, Mesic Birch-Aspen Forest, Black Spruce Dwarf-tree Peatland - Boreal Complex, Wet Black Spruce-Tussock Woodland, and Low Shrub-Tussock Tundra. Forest communities include California Coastal Closed-Cone Conifer Forest and Woodland, occurring at Pillar Point and Vandenberg AFB, Rocky Mountain Aspen Forest and Woodlands in Colorado, Inter-Mountain Basins Big Sagebrush Steppe, grasslands, and riparian systems in Nevada, Idaho, and Washington, Western Great Plains Floodplain Systems in Texas, and Central Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest in Virginia and the Carolinas. Grassland communities include Inter-Mountain Basins Semi-Desert Grassland, occurring at Hill and Mountain Home AFBs, Chihuahuan Gypsophilous Grassland and Steppe at Holloman and Kirtland AFBs in New Mexico, Columbia Plateau Steppe and Grassland at Fairchild AFB in Washington, and Great Plains Prairie Pothole at Grand Forks AFB in North Dakota.

Cheatgrass (*Bromus tectorum*, or downy brome), medusahead (*Taeniatherum caput-medusae*) and ventenata (*Ventenata dubia)* are invasive annual grasses that are spreading across the Northwest sagebrush communities and increasing wildfire size and frequency (Bradley et al., 2017; USDA NRCS, 2020). Cheatgrass is a significant and unnatural source of fuel production in these communities, which shifts the fire regime from FRG IV to FRG II. Cheatgrass had achieved 15 percent or more cover over 31 percent of the Intermountain West (Bradley et al., 2017). The presence of cheatgrass made these areas twice as likely to burn as those with low abundance, and four times more likely to burn multiple times between 2000 and 2015 (Bradley et al., 2017). Even at lower levels of cheatgrass cover (1 to 5 percent), fire probability increased rapidly. Recommended methods of control of these invasive annual grasses include a combination of prescribed burning, chemical control, and prescribed grazing with early intervention for the most cost-effective control (USDA NRCS, 2020).

E.1.5 Fire Regime Group V

Vegetation communities classified as FRG V are generally found in the western U.S. and Alaska. These are communities that very rarely experience fire. Some of the communities identified as FRG V are also classified as FRG IV, based on location and other factors. Communities identified as FRG V include Appalachian (Hemlock-)Northern Hardwood Forest, Beech-Maple Forest, North-Central Interior Wet Flatwoods, North-Central Interior Maple-Basswood Forest, Laurentian-Acadian Swamp Systems, Laurentian-Acadian Shrub-Herbaceous Wetland Systems, and Central Interior and Appalachian Swamp Systems in the northeast, Gulf and Atlantic Coastal Plain Swamp Systems, ranging from Louisiana to Massachusetts, Pinyon-Juniper Woodland, Semi-Desert Grassland, Desert Riparian Systems, Mixed Desert Scrub, and Sonoran Paloverde-Mixed Cacti Desert Scrub in the Southwest, and Rocky Mountain and Inter-Mountain Basin Montane Riparian Systems, Columbia Plateau Scabland Shrubland, and Columbia Plateau Low Sagebrush Steppe in the west.

Vegetation communities classified as FRG V at installations in Alaska include Maritime Western Hemlock and Hemlock-White Spruce Forests, White Spruce-Hardwood Forests, Alpine, Montane, and Lowland Floodplain Forest and Shrubland, Arctic and Alpine Mesic Herbaceous Meadows, Maritime Mountain Hemlock and Black Spruce Dwarf-tree Peatland, Boreal Herbaceous Fen - Alaska Sub-Boreal Complex, Boreal Shrub and Herbaceous Floodplain Wetland, Alaskan Pacific Maritime Alpine Floodplain, Temperate Pacific Freshwater Emergent Marsh and Tidal Salt and Brackish Marsh, Deciduous Shrub Swamp, Avalanche Slope Shrubland, Mesic Subalpine Alder Shrubland, Maritime Alpine Dwarf-Shrubland, Alpine Dwarf-Shrub Summit, Alpine Ericaceous Dwarf-Shrubland – Complex, and Mesic Scrub Birch-Willow Shrubland.

E.2 ADDITIONAL AFFECTED ENVIRONMENT DESCRIPTION – WILDLIFE

Representative species of fish and wildlife common in each FRG are listed in **Table E-1**.

Table E-1 Common Fish and Wildlife by Fire Regime Group

Common Name	Scientific Name	FRG I	FRG II	FRG III	FRG IV	FRG V
Mammals						
arctic ground squirrel	*Spermophilus parryi*					X
big brown bat	*Eptesicus fuscus*		X			
black bear	*Ursus americanus*					X
black-tailed jackrabbit	*Lepus californicus*				X	
black-tailed prairie dog	*Cynomys ludovicianus*		X			
bobcat	*Lynx rufus*			X		
coyote	*Canis latrans*	X	X		X	
desert cottontail	*Sylvilagus audobonii*		X		X	
eastern cottontail rabbit	*Sylvilagus floridanus*	X				
eastern grey squirrel	*Sciurus carolinensis*			X		
eastern red bat	*Lasionycteris borealis*	X				
eastern spotted skunk	*Spilogale putorius*			X		
fox squirrel	*Sciurus niger*	X				
gray fox	*Urocyon cinereoargenteus*			X		
hoary bat	*Lasiurus cinereus*	X	X		X	
hoary marmot	*Marmota caligata*					X
little brown bat	*Myotis lucifugus*					X
moose	*Alces alces*					X
mule deer	*Odocoileus hemionus*	X				
nine-banded armadillo	*Dasypus novemcinctus*			X		
northern flying squirrel	*Glaucomys sabrinus*					X
porcupine	*Erethizon dorsatum*					X
red fox	*Vulpes vulpes*		X			
red squirrel	*Tamiasciurus hudsonicus*					X
river otter	*Lontra canadensis*	X				
silver-haired bat	*Lasionycteris noctivagans*		X			
snowshoe hare	*Lepus americanus*					X
southern flying squirrel	*Glaucomys volans*			X		
striped skunk	*Mephitis mephitis*	X				

Table E-1 Common Fish and Wildlife by Fire Regime Group (continued)

Common Name	Scientific Name	FRG I	FRG II	FRG III	FRG IV	FRG V
Mammals (*continued*)						
swamp rabbit	*Sylvilagus aquaticus*			X		
Virginia opossum	*Didelphis virginiana*			X		
western pipistrelle	*Parastrellus hesperus*	X				
white-tailed deer	*Odocoileus virginianus*	X				
Birds						
bald eagle	*Haliaeetus leucocephalus*					X
belted kingfisher	*Megaceryle alcyon*			X		
black-capped chickadee	*Parus atricapillus*					X
boreal owl	*Aegolius funereus*					X
canyon towhee	*Melozone fusca*	X				
common raven	*Corvus corax*				X	
common redpoll	*Carduelis flammea*					X
dark-eyed junco	*Junco hyemalis*					X
eastern bluebird	*Sialia sialis*	X				
great blue heron	*Ardea herodias*			X		
great-tailed grackle	*Quiscalus mexicanus*	X				
horned lark	*Eremophila alpestris*				X	
mourning dove	*Zenaida macoura*		X		X	
northern cardinal	*Cardinalis cardinalis*	X				
northern harrier	*Circus hudsonius*		X			
red-necked grebe	*Podiceps grisegena*					X
red-shouldered hawk	*Buteo lineatus*			X		
red-winged blackbird	*Agelaius phoeniceus*	X	X	X	X	
ring-necked duck	*Aythra collaris*					X
ruby-crowned kinglet	*Regulus calendula*					X
sandhill crane	*Grus canadensis*		X			
sharp-tailed grouse	*Tympanuchus phasianellus*		X			
short-eared owl	*Asio flammeus*		X			
Swainson’s thrush	*Cathorus ustulatus*					X
upland sandpiper	*Bartramia longicauda*		X			
western kingbird	*Tyrannus verticalis*		X		X	
Fish						
blackside darter	*Percina maculate*		X			
bluegill	*Lepomis macrochirus*		X			
brook trout	*Salvelinus fontinalis*			X		
channel catfish	*Ictalurus punctatus*	X	X			
Chinook salmon	*Oncorhynchus tshawytscha*					X

Table E-1 Common Fish and Wildlife by Fire Regime Group (continued)

Common Name	Scientific Name	FRG I	FRG II	FRG III	FRG IV	FRG V
Fish (*continued*)						
coho salmon	*Oncorhynchus kisutch*					X
fathead minnow	*Pimephales promelas*	X	X			
largemouth bass	*Micropterus salmoides*	X	X	X		
rainbow trout	*Oncorhynchus mykiss*		X			X
striped bass	*Morone saxatilis*			X		
three-spine stickleback	*Gasterosteus aculeatus*					X
walleye	*Sander vitreus*			X		
Reptiles and amphibians						
American alligator	*Alligator mississippiensis*			X		
black racer	*Coluber constrictor*			X		
bull snake	*Pituophis catenifer sayi*	X	X			
bullfrog	*Lithobates catesbeiana*	X				
common snapping turtle	*Chelydra serpentina*	X	X			
desert horned lizard	*Phrynosoma platyrhinos*				X	
garter snake	*Thamnophis sirtalis*			X		
gopher frog	*Lithobates capito*			X		
Great Basin gopher snake	*Pituophis catenifer deserticola*					X
Great Plains toad	*Anaxyrus cognatus*				X	
green anole	*Anolis carolinensis*			X		
long-nosed leopard lizard	*Gambelia wislizenii*				X	
northern alligator lizard	*Gerrhonotus coeruleus*					X
northern leopard frog	*Lithobates pipiens*					X
Plains leopard frog	*Lithobates blairi*	X	X			
plains spadefoot toad	*Spea bombifrons*		X			
prairie rattlesnake	*Crotalus viridis*		X		X	
rubber boa	*Charina bottae*					X
western diamondback rattlesnake	*Crotalus atrox*	X				
wood frog	*Lithobates sylvaticus*				X	X

Source: Installation Integrated Natural Resources Management Plans

E.3 ADDITIONAL ENVIRONMENTAL CONSEQUENCES

E.3.1 Biological Resources Studies Incorporated by Reference

Council on Environmental Quality (CEQ) guidance encourages incorporating documents by reference. The references listed in **Table E-2** are sources of information incorporated into this PEA. Numerous studies have been conducted and reports written analyzing effects of fuels management activities on biological resources. These demonstrated analyses are important because they are relevant to the potential effects of the Proposed Action on biological resources. Rather than repeat these analyses here, they are briefly summarized in **Table E-2**.

Table E-2 Biological Resource Studies Incorporated by Reference

Citation and Reference Title	Brief Summary
Effects of Prescribed Burns, Mechanical, and Hand Removal	
Block et al., 2016 Effects of Prescribed Fire on Wildlife and Wildlife Habitat in Selected Ecosystems of North America. The Wildlife Society Technical Review 16-01.	A technical review of effects of prescribed fire on wildlife populations, communities, and wildlife habitat. Each of nine ecosystems is treated separately to show the widespread use of prescribed fire in North America and to provide ecosystem-specific examples of prescribed fire use and effects.
Brown and Smith, 2000 Wildland Fire in Ecosystems: Effects of Fire on Flora. General Technical Report. RMRS-GTR-42-vol. 2. USDA, Forest Service	A review of the effects of fire on flora and fuels. Topics include fire regime classification and characteristics, autecological effects of fire, and postfire plant community developments in ecosystems throughout the United States and Canada, global climate change, ecological principles of fire regimes, and practical considerations for managing fire in an ecosystem context.
Lyon et al., 2000 Wildland Fire in Ecosystems: Effects of Fire on Fauna. General Technical Report. RMRS-GTR-42-vol. 1. USDA, Forest Service	An analysis of effects of wildland fires on animals and their habitat. Effects differ by season, size, fire regime group, and fire intensity. Adaptations to both fire itself and the habitat changes it brings are described.
Effects of Chemical Treatment	
USFWS, 2023 2023 Revised Final Biological Opinion for the US Forest Service Programmatic Nationwide Aerial Application of Fire Retardant on National Forest System Land	Biological Opinion on the US Forest Service's proposed implementation of the Programmatic Nationwide Aerial Application of Fire Retardant on National Forest System Land and its effects on listed species and designated critical habitat
Effects of Targeted Grazing	
Filazzola et al., 2020 The Effects of Livestock Grazing on Biodiversity are Multi-trophic: a Meta-analysis. Ecology Letters.	Results of a meta-analysis on 109 independent studies that tested the response of animals or plants to livestock grazing relative to livestock excluded. Conducted to identify the potential multi-trophic effects on animal biodiversity (e.g., herbivores, pollinators, and predators).

Table E-2 Biological Resource Studies Incorporated by Reference (continued)

Citation and Reference Title	Brief Summary
Effects of Targeted Grazing (*continued*)	
Schieltz and Rubenstein, 2016 Evidence based review: positive versus negative effects of livestock grazing on wildlife. What do we really know? Environmental Research Letter, vol 11	An evidence-based review of the existing literature. A total of 807 sources were included, including 646 primary sources that reported original data. Most studies examined birds (330) and mammals (262), with fewer including reptiles (91) or amphibians (58).
USDA NRCS, 2006 Migratory Bird Responses to Grazing. Wetlands Reserve Program, Grassland Workgroup Report.	A review of migratory bird responses to grazing, and development of management guidelines for use by NRCS resource managers when they evaluate and develop compatible uses of Wetland Reserve Program easements involving grazing.

Notes:
NRCS = Natural Resource Conservation Service; USDA = US Department of Agriculture; USFWS = US Fish and Wildlife Services

E.3.2 Summaries of Adverse and Beneficial Effects on Wildlife

Short-term Impacts: Short-term effects would generally be adverse and include inadvertent injury or death, disturbance, displacement, and changes in food, cover, and nesting habitat. Direct mortality would likely be confined to a few individuals within populations (Conner et al., 2011). Spring fires would pose greater adverse effects because breeding would be interrupted or prevented (Lyon et al., 2000). Many grassland birds are ground nesters (Van Devender, 1995) and may be adversely affected by fires during nesting season. Adverse effects would be greater on less mobile species, such as reptiles, amphibians, and nestling and juveniles, which may be injured or killed if they cannot escape. Most species avoid fire by moving away from the area or retreating into underground burrows, but some species may experience direct mortality (Gonzalez et al., 2022). More mobile species, such as birds, bats, and larger mammals, are less likely to be injured or killed, but would also experience changes in habitat type and availability.

Short-term beneficial effects would occur as fires create foraging opportunities for predators as prey species flee the area. Some raptor species, such as Swainson's hawks (*Buteo swainsoni*), red-tailed hawks (*Buteo jamaicensis*), and northern harriers (*Circus cyaneus*), are attracted to prescribed fires and forage on exposed, injured, or dead reptiles and small mammals (Hovick et al., 2017). The effects on these prey species would be adverse, but limited to individuals in a limited area. Habitat specialists would be vulnerable to adverse effects from proposed fuels treatments because of their specific habitat requirements. For example, fisher (*Martes pennanti*) would be adversely affected in the short-term through its association with dense forests and use of large and old trees as resting sites (Truex and Zielinski, 2013).

Responses to fire are species-specific and based on habitat requirements. In general, species that prefer high cover and vertical structure decrease in presence and abundance after fire, and species that prefer more open environments and foods that are stimulated by burning (e.g., seeds, USFS, 2000) increase in presence and abundance (Bock and Bock, 1978; Bock and Bock, 1988; Bock and Bock, 1992; Fitzgerald et al., 2001; Litt and Steidl, 2011; McPherson, 1995). Changes in presence and abundance of vertebrate species after fire typically are relatively ephemeral, and populations recover within 1 to 4 years (Albrecht et al., 2008; Bock and Bock, 1978; Bock and Bock, 1988; Litt and Steidl, 2011), depending on post-fire precipitation and vegetation growth (Bock and Bock, 1992; Cable, 1967; Wright and Bailey, 1982).

Exposure to, or inadvertent ingestion of, firefighting chemicals used during prescribed burns would potentially result in lethal and non-lethal adverse effects on wildlife. Non-lethal effects may include adverse changes to behavior, overall health and fitness, and physiology, which in turn may lead to impacts on individual survival, growth or reproduction. In the context of common wildlife species occurring on DAF installations throughout the United States, it would be anticipated that these effects would be less than significant. Adherence to best management practices (BMPs) would further prevent or minimize these impacts.

Long-term Impacts: Long-term effects from prescribed burns would generally be beneficial to most species. Habitat management would be a key benefit. Fire would increase the heterogeneity of the landscape; therefore, animal species would have increased opportunities to select from a variety of habitat conditions and successional stages (Lyon et al., 2000). Prescribed burns have been shown to favor raptor species when prey species increase in response to post-fire increases in forage; such species that would potentially experience beneficial effects include burrowing owl (*Athene cunicularia*) in desert grassland, sharp-shinned hawk (*Accipiter striatus*) and Cooper's hawk (*Accipiter cooperii*) in chaparral, and northern goshawk (*Accipiter gentilis*) and sharp-shinned hawk in ponderosa pine forest (Dodd, 1988).

Wildlife at numerous DAF installations currently benefit from reduction and management of fuels. For example, at Eglin AFB, the Department of the Air Force (DAF) conducts prescribed burns and othe*r fuels treatments to manage habitat for red-cockaded woodpecker (*Leuconotopicus borealis*), reticulated flatwoods salamander (*Ambystoma bishopi*), and gopher tortoise (*Gopherus polyphemus*). At Shaw AFB, prescribed burns are conducted to make longleaf pine forests more suitable for red-cockaded woodpecker. Prescribed fires are conducted at numerous bases annually to reduce invasive plant species that degrade wildlife habitat, such as Holloman AFB and Beale AFB. The burrowing owl, which occurs on many DAF-managed lands (for example, Schriever AFB, Beale AFB, Holloman AFB, Kirtland AFB, Mountain Home AFB, and Eglin AFB) benefits from fuels management, as it prefers open habitats and has declined on grasslands with increases in litter cover, suggesting that using fire to reduce litter cover may be beneficial to this species (Komarek, 1969; Kramp et al., 1983).

Another long-term benefit of prescribed burns is the reduction of risk of large high-intensity wildfires that may occur during any season and damage habitat. Reduction of fuels improves the resilience of forests and rangelands to wildfire, insect outbreaks, plant invasions, and other disturbances (USFS, 2023).

Prescribed burns also provide long-term beneficial effects on biological resources by:

- Reducing encroachment of trees and shrubs that shade out prairie and other shade-intolerant plants (Holmes et al., 2017);
- Reducing the adverse impacts of fire suppression (Lyon et al., 2000);
- Promoting flowering and fruiting of plant species (Mola and Williams, 2018);
- Improving nutritional quality and nutrient cycling of soil (Neary et al., 2005);

- Reducing spread of invasive and pest species (Erickson and White, 2007);
- Creating a mosaic of habitats for a variety of plants and animals (Lyon et al., 2000);
- Promoting resiliency to climate change (Stephens et al., 2012a); and
- Providing required elements for many species, such as many conifers, black-backed woodpecker (Picoides arcticus), and Karner blue butterfly caterpillar (Lycaeides melissa samuelis) (USFWS, 2023).

Svingen and Giesen (1999) observed higher densities of mountain plovers during migration on prescribed burns than on unburned shortgrass steppe, and Augustine and Skagen (2014) suggested that prescribed fire was important for creating suitable nesting habitat when other forms of disturbance were absent. In addition, prescribed burns in combination with active black-tailed prairie dog (*Cynomys ludovicianus*) colonies may enhance breeding habitat for mountain plovers in shortgrass steppe (Augustine, 2011). Populations of burrowing owls reportedly have declined on grasslands with increases in litter cover, suggesting that using fire to reduce litter cover may be beneficial to this species (Komarek, 1969; Kramp et al., 1983). Birds of prey are particularly attracted to fire and smoke, which appears to be related to vulnerability and ease of capture of prey species forced to flee from the flames. Many bird species, including goldfinches, bluebirds, warblers, and grosbeaks, are attracted to recently burned grasslands (Clark, 1935; Ford and McPherson, 1996; Handley, 1969; Komarek, 1969; Kramp et al., 1983; Lyon and Marzluff, 1984; Tomback, 1986). Prescribed burning regimes that incorporate both dormant- and growing-season fire have little short-term effect on diversity of herpetofauna (Keyser et al., 2004; Ruthven III et al., 2008; Wilgers and Horne, 2006).

Deer and elk easily avoid injury during fire (Boeker et al., 1972; Dills, 1970; Hallisey and Wood, 1976; McCulloch, 1969), although young ungulates are frequently killed by large fires (Daubenmire, 1968; Kramp et al., 1983). Most small mammals can escape fires by hiding in burrows or rock crevices (Heinselman, 1973; Howard et al., 1959), where soil provides insulation (Bendell, 1974; Kramp et al., 1983). Small mammals die most commonly from a combination of heat effects and asphyxiation. Other causes of death include physiological stress from overexertion while trying to escape, trampling as large mammals stampede, and predation as small mammals flee from fire (Kaufman et al., 1990). Fires that remove food and cover (litter and standing dead vegetation) temporarily may be detrimental to small rodents immediately after fire (Daubenmire, 1968; Kaufman et al., 1990). However, repopulation of such areas is reported to be nearly complete within 6 months (Cook, 1959). Mice and rodent populations often increase in response to increased availability of forb seeds and insects. In addition, burned areas often support more diverse animal populations than comparable unburned sites because of increased habitat diversity (Beck and Vogl, 1972; Wirtz, 1977). Mammals that respond negatively to fire include species that forage on invertebrates in the litter layer, species that live in relatively dense vegetation and eat plant foliage, and species that use, at least partially, aboveground nests of plant debris. Examples in the southern Great Plains include cotton rat, Bailey's pocket mouse (*Chaetodipus baileyi*), pinyon mouse (*Peromyscus truei*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), ground squirrel, southern redbacked vole (*Clethrionomys C. gapperi*), white-throated woodrat (*Neotoma albigula*), western harvest mouse, and meadow vole (*Microtus pennsylvanicus*) (Beck and Vogl, 1972; Bradley and Mauer, 1973; USFS, 2000; Bock and Bock, 1978; Ford, 2002; Geier and Best, 1980; Kaufman et al., 1990; Komarek, 1969; Kramp et al., 1983; Mazurek, 1981).

Mammals that respond positively to fire include species that use ambulatory locomotion in microhabitats with a relatively open herbaceous layer and feed on seeds and insects and that use leaping locomotion (Kaufman et al., 1990). Population size and habitat use increase after fire because of a concomitant increase in availability of forb seeds, insects, and newly greening vegetation, creation of open areas in otherwise dense vegetation, and eventually an increase in forb cover. Increases may occur immediately or gradually as areas begin to revegetate and habitat diversity increases. Small mammals that show a positive response include deer mice, eastern cottontail rabbit, kangaroo rat (*Dipodomys* spp.), grasshopper mice (*Onychomys* spp.), Nuttall's cotton-tailed rabbit (*Sylvilagus nuttallii*), thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*), and hispid pocket mouse (*Chaetodipus hispidus*) (Beck and Vogl, 1972; Bradley and Mauer, 1973; Cable, 1967; Cook, 1959; Daubenmire, 1968; Ford, 2002; Kaufman et al., 1990; Komarek, 1969; Kramp et al., 1983).

Carnivores that occur in the southern Great Plains include badgers (*Taxidea taxus*), bobcats, swift foxes (*Vulpes velox*), and coyotes. These species may increase in response to fire-enhanced rodent prey populations (Gruell, 1980; Kramp et al., 1983; Wirtz, 1977). Swift foxes are shortgrass specialists and are thus heavily dependent on disturbance to maintain high-quality shortgrass habitat (Thompson et al., 2008). Habitat quality for swift foxes represents a balance between prey availability and exposure to predation (Thompson and Gese, 2007), which can be created with low-intensity fire. Prescribed burning is therefore an appropriate method to maintain high-quality habitat for swift fox (Thompson et al., 2008). Population size and habitat use of most native ungulates, including bison (*Bison bison*), white-tailed deer, elk, and pronghorn (*Antilocapra americana*) increase after fire (Ford and McPherson, 1996). These increases are reportedly the result of an increase in forage quality and quantity in newly burned areas (Ford and McPherson, 1996).

Prescribed fire would potentially have an indirect, positive effect on large carnivore populations because of the high-quality ungulate habitat it creates. Furthermore, prescribed fires have been known to result in increased amounts of coarse woody debris important to forest mesocarnivores such as fishers (*Pekania pennanti*), martens, wolverines, and Canada lynx. Martens and Canada lynx in particular are associated with early post-fire conditions (Koeler and Aubry, 1994). Gustine (et al., 2014) predicts that caribou (*Rangifer tarandus*) wintering in boreal forest will experience fire-driven reductions in lichen-producing habitats that will, at a minimum, alter their distribution.

Schurbon and Fauth (2003) studied the effects of prescribed burning on amphibian diversity in a national forest in South Carolina and found significant adverse effects. Species richness increased and evenness decreased with time since burn, primarily because salamanders were rarely encountered at sites burned within 2 years. In a southern Mississippi pine savanna, Langford (et al., 2007) found greater numbers of herpetofauna in burned stands compared with unburned stands, while species diversity indices were equal between prescribed burn treatments.

Latif (et al., 2021) found examples of both positive and negative effects of wildfire and prescribed fire on bird occupancy, depending on their life history traits. Hutto (1995) reported that 15 species of birds in the Rocky Mountains were associated with post-burn plant communities and more than 87 species were found in previously burned areas. Boat-tailed grackles (*Quiscalus major*) and red-winged blackbirds (*Agelaius phoeniceus*) preferred recently burned plots, possibly because burns reduce visual obstruction and ground cover, facilitating foraging for prey, contact with conspecifics, and detection of predators (Gabrey et al., 1999). Marsh wrens (*Cistothorus palustris*) occurred more frequently in unburned than in burned plots, whereas common yellowthroats (*Geothlypis trichas*) and sedge wrens (*Cistothorus stellaris*) avoided recently burned marshes entirely, but were present the following winter. The authors concluded that habitat suitability was reduced temporarily following winter burning for certain wintering bird species of coastal marshes, such as tidal marsh sparrows and wrens, but these species recolonized burned areas by the second winter, after plant cover had returned to pre-burn levels.

Vegetation – Fire Adaptations

These fire resistance features are found in longleaf pine (*Pinus palustris*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), and Douglas-fir (*Pseudotsuga menziesii*).

Seed adaptations to fire include cones that store seeds in the canopy until heat triggers the cone to open. Species with dormant, often thick-shelled seeds, are triggered to sprout after fire, and many species reproduce only after disturbance by fire to take advantage of cleared ground and reduced competition for light and water. Some examples include pond pine (*Pinus serotina*), American cane species (*Arundinaria* spp.), wiregrass , buckbrush (*Ceanothus cuneatus*), lodgepole pine (*Pinus contorta*), and manzanita (*Arctostaphylos* spp.).

Sprouting is a common plant response by many species to regrow from roots, trunks, limbs, or crown after a burn. This approach is used by most grasses, shrubs, and trees, but some species are particularly notable in persisting despite frequent fire disturbances, including many shrubs and oaks (*Quercus* spp.), sweetgum (*Liquidambar styraciflua*), aspen (*Populus* spp.), and madrone (*Arbutus menziesii*).

Many species use high seed production and dispersion by wind, animals, or people to quickly colonize burned areas after fire, including native and non-native species. Notable non-native species include star thistle (*Centaurea solstitialis L.*), fireweed (*Chamerion angustifolium*), and scotch broom (*Cytisus scoparius*).

Species considered avoiders are those that do not necessarily have adaptations that provide resistance or resilience to fires, but occur in conditions that are not conducive to fire, such as wetland or aquatic habitats, cool climates, or high elevations. These species often have characteristics that make them susceptible to fire, such as thin bark, shallow roots, and lots of resin that make them highly flammable and unlikely to survive moderate to high intensity fires. Species in this group include white fir (*Abies concolor*), western red cedar (*Juniperus virginiana*), and western hemlock (*Tsuga heterophylla*). Abundance and distribution of these species have historically balanced with fire-adapted species across the landscape. Decades of fire suppression have resulted in increased abundance and distribution of these species, resulting in altered fire regimes.

Species that flower or drop seeds only after fire proliferate following fires. Depending on fire timing and frequency, some species would become less abundant in burned areas. Frequent fires reduce understory trees and shrubs and increase grasses and forbs, resulting in grassland or savanna understory. Less frequent fires would temporarily reduce competition, invigorate recruitment, and create openings with variable habitat types, resulting in healthy diverse vegetation communities. Fire suppression allows succession by fire intolerant species toward a climax condition that has reduced diversity and is not consistent with historical communities.

E.4 LANDFIRE SUPPORTING INFORMATION

The Biophysical Setting (BPS), Vegetation Condition Class (VCC), and Existing Vegetation Type National Vegetation Classification (NVC) feature class data (LANDFIRE data) were used for the analysis. The VCC, also known as Fire Regime Condition Class (FRCC), is an interagency standardized tool for assessing the degree of departure from reference condition vegetation, fuels, and disturbance regimes (NIFTT, 2010; LANDFIRE, 2016). FRCC 1 represents ecosystems with low departure (0 to 33 percent) from a defined reference period; that is, landscapes that are still within the natural or historical range of variability. FRCC 2 designates ecosystems with moderate departure (34 to 66 percent), and FRCC 3 designates ecosystems with high departure (67 to 100 percent) from reference conditions. In addition to identifying degree of departure from reference condition for natural communities, the VCC data identify areas that are no longer considered non-burnable, such as cover of water, snow/ice, barren, sparsely vegetated, urban development, or agriculture. It also includes areas that have recently been disturbed by fire and forest management practices. It should be noted that while the historical range and variation (HRV) – the vegetation condition used for the assignment of fire regime groups — is used as the reference condition to guide the Air Force Wildland Fire Branch (AFWFB) treatment objectives and design, it is not necessarily an achievable or realistic end state. It is not necessarily achievable because of the existing departure from the HRV, unpredictable future climate conditions, anthropogenic impacts, and ecosystems that can no longer support restoration to historical conditions.

As part of the geographic information system (GIS) analysis, the VCC data were spatially merged with the BPS data and exported to a table. The data provide adjusted land classes, from historical setting to current distribution and condition of the remaining natural communities and associated FRG, as well as distribution of anthropogenic land cover. The LANDFIRE data for the continental United States and Alaska, boundaries of DAF-managed lands, and other resource data were imported into a GIS. The DAF-managed land boundaries (DAF, 2023) were used to reduce the dataset and identify the LANDFIRE BPS and NVC classes within each DAF-managed land area. The tabular data were then exported to a database for additional analysis. The LANDFIRE classification uses a 30-meter-square grid to identify vegetation classes. The number of blocks were used to convert area to acres. These data, along with resource-specific data, were used to describe the affected environment in the project area as a whole and to identify any generalizations that could be made regarding the environmental consequences. For example, tables 3-10 through 3-14 in the Water Resources section show data from the USFWS on the types and acreages of water resources in each FRG. Another example is the summaries at the beginning of each FRG section that describes the percentage of the FRG in the project area by number and acreage. The BPS provides context to the historical conditions that influenced plant and animal responses to a local and regional conditions and environmental pressures. Assessed from a pre-Columbian perspective of historical land cover classification, each community is assigned a fire return interval and severity. These characteristics were used to assign the FRG for the vegetation communities. The communities are described on the LANDFIRE website at https://www.landfire.gov/bps-models.php.

LANDFIRE uses BPS to depict reference conditions of vegetation systems of the natural plant communities that may have been dominant on the landscape prior to Euro-American settlement and should not be regarded as a representation of existing vegetation (LANDFIRE, 2016). The BPS provides context to the historical conditions that influenced plant and animal responses to local and regional conditions and environmental pressures. Using comparative biological, geological, cultural, and climatic data, each community is assigned a FRG based on fire return intervals and fire severity. The FRG and BPS setting was used to characterize the vegetation setting for the DAF-managed lands. The latest LANDFIRE revision of BPS was 2020 for the Continental United States (CONUS) and 2016 for Alaska.

- The six-category system provides more detail and is collapsible to the three-category system. The six VCC categories are defined as:
- Condition Class I.A: VDep between 0 and 16 (Very Low Departure),
- Condition Class I.B: VDep between 17 and 33 (Low to Moderate Departure);
- Condition Class II.A: VDep between 34 and 50 (Moderate to Low Departure);
- Condition Class II.B: VDep between 51 and 66 (Moderate to High Departure);
- Condition Class III.A: VDep between 67 and 83 (High to Moderate Departure), and
- Condition Class III.B: VDep between 84 and 100 (High Departure).

As part of the GIS analysis, the VCC data were spatially merged with the BPS data and exported to create this table. The data provide adjusted land classes, from historical setting to 2020 for CONUS and 2016 for Alaska distribution and condition of the remaining natural communities and associated FRG, as well as distribution of anthropogenic land cover occurring at DAF-managed lands. The information was used to create the information in **Table 3-1**.

The purpose of **Table E-3** is to provide historic BPSs and fire regime characterization for DAF-managed lands. It utilized publicly available LANDFIRE data to provide reference conditions of historic setting which is updated using LANDFIRE VCC data to represent changes to land cover and vegetation communities to reflect recent conditions DAF-managed lands.

The purpose of **Table E-4** is to present the current (rather than historical) land cover on DAF-managed lands to use as the baseline condition against which the Proposed Action was analyzed. The LANDFIRE Existing Vegetation Type NVC was used, which also identifies ruderal vegetation communities resulting from anthropogenic disturbance that no longer conform to natural community structure or composition. The information in this table was used to describe the Affected Environment for Biological Resources in the main document. The most current version of the NVC used was based on 2016 conditions.

Table E-3 Acreage of Department of the Air Force-Managed Lands by Historic Land Class, Fire Regime Group, Vegetation Condition Class, and Installation

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Air Force Academy	1	10542 - Southern Rocky Mountain Ponderosa Pine Woodland-North	5,872.6	0.0%	87.4%	0.0%	0.0%	0.1%	12.6%	0.0%	0.0%
Air Force Academy	2	11470 - Western Great Plains Foothill and Piedmont Grassland	5,692.4	63.2%	0.0%	0.0%	0.0%	0.0%	36.7%	0.0%	0.0%
Air Force Academy	3	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	1.0	0.0%	77.5%	0.0%	0.0%	0.0%	22.5%	0.0%	0.0%
Air Force Academy	4	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	2,755.7	0.0%	0.0%	87.5%	0.0%	0.1%	12.3%	0.0%	0.0%
Air Force Academy	3	11590 - Rocky Mountain Montane Riparian Systems	1,782.0	80.6%	1.8%	0.0%	0.0%	0.0%	17.6%	0.0%	0.0%
Air Force Academy	1	10510 - Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland	752.5	0.0%	88.3%	0.0%	0.0%	0.1%	11.6%	0.0%	0.0%
Air Force Academy	1	10541 - Southern Rocky Mountain Ponderosa Pine Woodland-South	536.3	0.0%	0.0%	90.3%	0.0%	0.1%	9.6%	0.0%	0.0%
Air Force Academy	2	11490 - Western Great Plains Shortgrass Prairie	448.4	86.2%	0.0%	0.0%	0.0%	0.2%	13.6%	0.0%	0.0%
Air Force Academy	1	10610 - Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	387.8	0.0%	99.5%	0.0%	0.1%	0.0%	0.4%	0.0%	0.0%
Air Force Academy	1	11172 - Southern Rocky Mountain Ponderosa Pine Savanna-North	365.6	0.0%	0.0%	82.8%	0.1%	0.1%	17.0%	0.0%	0.0%
Air Force Academy	1	10540 - Southern Rocky Mountain Ponderosa Pine Woodland	248.4	0.0%	99.3%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%
Air Force Academy	2	10940 - Western Great Plains Sandhill Steppe	194.6	0.0%	97.9%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%
Air Force Academy	3	11600 - Rocky Mountain Subalpine/Upper Montane Riparian Systems	103.7	0.0%	99.0%	0.0%	0.0%	0.4%	0.6%	0.0%	0.0%
Air Force Academy	4	10110 - Rocky Mountain Aspen Forest and Woodland	70.1	98.1%	0.0%	0.0%	0.0%	0.3%	1.6%	0.0%	0.0%
Air Force Academy	XX	11 - Open Water	52.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Air Force Academy	1	11460 - Southern Rocky Mountain Montane-Subalpine Grassland	35.1	98.1%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%
Air Force Academy	XX	31 - Barren-Rock/Sand/Clay	25.4	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Air Force Academy	4	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	23.2	0.0%	0.0%	1.0%	0.0%	87.5%	11.5%	0.0%	0.0%
Air Force Academy	3	10520 - Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	22.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Air Force Academy	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	14.7	0.0%	0.0%	31.8%	0.0%	0.0%	68.2%	0.0%	0.0%
Air Force Academy	1	11170 - Southern Rocky Mountain Ponderosa Pine Savanna	3.8	0.0%	82.4%	0.0%	0.0%	0.0%	17.6%	0.0%	0.0%
Air Force Academy	5	11530 - Inter-Mountain Basins Greasewood Flat	1.1	0.0%	60.0%	0.0%	0.0%	0.0%	40.0%	0.0%	0.0%
Air Force Academy	3	10590 - Southern Rocky Mountain Pinyon-Juniper Woodland	1.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Air Force Academy Total		**-**	**19,389.5**	**28.5%**	**35.0%**	**16.5%**	**0.0%**	**0.3%**	**19.4%**	**0.0%**	**0.3%**
Altus AFB	1	11320 - Central Mixedgrass Prairie	4,935.8	0.0%	36.1%	0.0%	6.2%	0.0%	57.7%	0.0%	0.0%
Altus AFB	1	11110 - Western Great Plains Mesquite Woodland and Shrubland	73.9	0.0%	0.0%	89.0%	6.9%	0.0%	4.1%	0.0%	0.0%
Altus AFB	4	11620 - Western Great Plains Floodplain Systems	46.0	0.0%	57.0%	0.0%	20.4%	0.0%	22.6%	0.0%	0.0%
Altus AFB	3	11190 - Southern Rocky Mountain Juniper Woodland and Savanna	3.4	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Altus AFB	2	11480 - Western Great Plains Sand Prairie	2.6	26.1%	0.0%	0.0%	28.6%	0.0%	45.3%	0.0%	0.0%
Altus AFB	4	10940 - Western Great Plains Sandhill Steppe	2.0	0.0%	66.7%	0.0%	22.2%	0.0%	11.1%	0.0%	0.0%
Altus AFB	XX	11 - Open Water	0.7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Altus AFB	2	14951 - Western Great Plains Depressional Wetland Systems-Playa	0.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Altus AFB	XX	10070 - Western Great Plains Sparsely Vegetated Systems	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Altus AFB Total		**-**	**5,065.1**	**0.0%**	**35.7%**	**1.4%**	**6.3%**	**0.0%**	**56.5%**	**0.0%**	**0.0%**
Arnold AFB	1	14170 - Eastern Highland Rim Prairie and Barrens	15,396.2	0.0%	0.0%	80.4%	6.0%	0.0%	13.6%	0.0%	0.0%
Arnold AFB	3	14720 - Central Interior and Appalachian Riparian Systems	15,245.5	0.0%	84.0%	0.0%	5.9%	0.0%	10.1%	0.0%	0.0%
Arnold AFB	XX	11 - Open Water	3,815.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Arnold AFB	2	13050 - Southern Interior Low Plateau Dry-Mesic Oak Forest	3,427.4	0.0%	81.5%	0.0%	11.4%	0.0%	7.1%	0.0%	0.0%
Arnold AFB	5	14790 - Central Interior and Appalachian Swamp Systems	456.2	0.0%	84.5%	0.0%	7.3%	0.0%	8.2%	0.0%	0.0%
Arnold AFB	1	13760 - Southern Ridge and Valley/Cumberland Dry Calcareous Forest	334.9	0.0%	0.0%	67.0%	26.4%	0.0%	6.6%	0.0%	0.0%
Arnold AFB	1	13170 - Allegheny-Cumberland Dry Oak Forest and Woodland	104.8	0.0%	46.7%	0.0%	50.2%	0.0%	3.1%	0.0%	0.0%
Arnold AFB	3	13210 - South-Central Interior Mesophytic Forest	92.1	0.0%	0.0%	77.4%	12.1%	0.0%	10.5%	0.0%	0.0%
Arnold AFB	2	11290 - California Central Valley and Southern Coastal Grassland	27.5	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Arnold AFB	1	13510 - Southeastern Interior Longleaf Pine Woodland	9.7	0.0%	0.0%	95.4%	0.0%	0.0%	4.6%	0.0%	0.0%
Arnold AFB	1	14570 - South-Central Interior/Upper Coastal Plain Wet Flatwoods	5.2	0.0%	0.0%	55.1%	15.0%	0.0%	29.8%	0.0%	0.0%
Arnold AFB	1	13030 - Northeastern Interior Dry-Mesic Oak Forest	4.9	0.0%	0.0%	0.9%	0.0%	0.0%	99.1%	0.0%	0.0%
Arnold AFB	1	13690 - Central Appalachian Dry Oak-Pine Forest	3.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Arnold AFB	3	11520 - California Montane Riparian Systems	3.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Arnold AFB	XX	31 - Barren-Rock/Sand/Clay	2.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Arnold AFB	1	13530 - Southern Appalachian Low-Elevation Pine Forest	1.6	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Arnold AFB	5	13700 - Appalachian (Hemlock-)Northern Hardwood Forest	1.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Arnold AFB	1	11130 - California Coastal Live Oak Woodland and Savanna	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Arnold AFB	1	11120 - California Central Valley Mixed Oak Savanna	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Arnold AFB	1	13680 - Southern Piedmont Dry Oak(-Pine) Forest	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Arnold AFB Total		**-**	**38,933.5**	**0.0%**	**41.2%**	**32.6%**	**6.1%**	**0.0%**	**10.3%**	**0.0%**	**9.8%**
Avon Park AFR	1	14530 - Central Florida Pine Flatwoods	37,827.8	0.0%	95.1%	0.0%	2.8%	0.0%	2.1%	0.0%	0.0%
Avon Park AFR	2	14250 - Florida Dry Prairie	36,671.9	0.0%	94.2%	0.0%	3.2%	0.0%	2.5%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Avon Park AFR	1	14600 - Southern Coastal Plain Nonriverine Cypress Dome	11,757.2	0.0%	98.8%	0.0%	0.8%	0.0%	0.4%	0.0%	0.0%
Avon Park AFR	2	14890 - Floridian Highlands Freshwater Marsh	7,850.3	0.0%	0.0%	92.2%	5.3%	0.0%	2.5%	0.0%	0.0%
Avon Park AFR	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	6,217.5	79.6%	0.0%	0.0%	3.8%	0.0%	16.6%	0.0%	0.0%
Avon Park AFR	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	1,778.6	0.0%	0.0%	91.4%	2.7%	0.0%	5.9%	0.0%	0.0%
Avon Park AFR	2	13870 - Florida Peninsula Inland Scrub	1,613.2	0.0%	0.0%	60.6%	32.1%	0.0%	7.3%	0.0%	0.0%
Avon Park AFR	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	1,546.4	0.0%	0.0%	97.0%	2.1%	0.0%	0.9%	0.0%	0.0%
Avon Park AFR	1	13560 - Florida Longleaf Pine Sandhill	526.5	0.0%	74.5%	0.0%	16.2%	0.0%	9.3%	0.0%	0.0%
Avon Park AFR	1	13300 - Southern Coastal Plain Dry Upland Hardwood Forest	277.0	0.0%	0.0%	66.0%	29.1%	0.0%	4.9%	0.0%	0.0%
Avon Park AFR	XX	11 - Open Water	192.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Avon Park AFR	1	14540 - East Gulf Coastal Plain Near-Coast Pine Flatwoods	159.1	0.0%	96.1%	0.0%	3.3%	0.0%	0.6%	0.0%	0.0%
Avon Park AFR Total		**-**	**106,418.5**	**4.6%**	**77.7%**	**10.8%**	**3.6%**	**0.0%**	**3.1%**	**0.0%**	**0.2%**
Barksdale AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	10,709.8	0.0%	62.1%	0.0%	2.2%	0.0%	35.6%	0.0%	0.0%
Barksdale AFB	1	13480 - West Gulf Coastal Plain Upland Longleaf Pine Forest and Woodland	8,618.1	0.0%	0.0%	91.3%	0.7%	0.0%	8.0%	0.0%	0.0%
Barksdale AFB	1	13710 - West Gulf Coastal Plain Pine-Hardwood Forest	6,526.4	0.0%	0.0%	90.5%	0.1%	0.0%	9.4%	0.0%	0.0%
Barksdale AFB	1	14510 - West Gulf Coastal Plain Wet Longleaf Pine Savanna and Flatwoods	6,004.4	0.0%	0.0%	94.7%	0.8%	0.0%	4.6%	0.0%	0.0%
Barksdale AFB	1	13230 - West Gulf Coastal Plain Mesic Hardwood Forest	4,013.9	0.0%	97.9%	0.0%	0.3%	0.0%	1.8%	0.0%	0.0%
Barksdale AFB	1	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	3,383.1	0.0%	0.0%	97.4%	0.0%	0.0%	2.6%	0.0%	0.0%
Barksdale AFB	1	14580 - West Gulf Coastal Plain Pine-Hardwood Flatwoods	2,203.0	0.0%	0.0%	86.3%	0.1%	0.0%	13.6%	0.0%	0.0%
Barksdale AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	1,518.5	0.0%	83.9%	0.0%	3.4%	0.0%	12.7%	0.0%	0.0%
Barksdale AFB	1	15060 - West Gulf Coastal Plain Nonriverine Wet Hardwood Flatwoods	1,279.6	0.0%	89.3%	0.0%	0.1%	0.0%	10.6%	0.0%	0.0%
Barksdale AFB	XX	11 - Open Water	943.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Barksdale AFB	2	14290 - West Gulf Coastal Plain Southern Calcareous Prairie	6.3	0.0%	0.0%	85.9%	3.5%	0.0%	10.6%	0.0%	0.0%
Barksdale AFB Total		**-**	**45,206.9**	**0.0%**	**28.8%**	**54.5%**	**0.9%**	**0.0%**	**13.7%**	**0.0%**	**2.1%**
Barry M Goldwater Range	5	10900 - Sonoran Granite Outcrop Desert Scrub	220,391.1	0.0%	99.8%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Barry M Goldwater Range	XX	31 - Barren-Rock/Sand/Clay	55,777.5	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Barry M Goldwater Range	5	10870 - Sonora-Mojave Creosotebush-White Bursage Desert Scrub	40,880.5	98.7%	0.0%	0.0%	0.3%	0.8%	0.2%	0.0%	0.0%
Barry M Goldwater Range	5	11552 - North American Warm Desert Riparian Systems-Stringers	20,355.1	0.0%	0.0%	98.9%	0.7%	0.1%	0.4%	0.0%	0.0%
Barry M Goldwater Range	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	19,454.9	0.0%	0.0%	0.0%	0.6%	98.4%	0.9%	0.0%	0.0%
Barry M Goldwater Range	2	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	11,337.9	0.0%	0.0%	98.0%	0.0%	0.1%	1.8%	0.0%	0.0%
Barry M Goldwater Range	1	11550 - North American Warm Desert Riparian Systems	4,982.4	0.0%	0.0%	98.9%	1.0%	0.0%	0.1%	0.0%	0.0%
Barry M Goldwater Range	5	11090 - Sonoran Paloverde-Mixed Cacti Desert Scrub	3,192.3	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Barry M Goldwater Range	5	10820 - Mojave Mid-Elevation Mixed Desert Scrub	2,844.6	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Barry M Goldwater Range	4	10800 - Inter-Mountain Basins Big Sagebrush Shrubland	61.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Barry M Goldwater Range	4	11040 - Mogollon Chaparral	41.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Barry M Goldwater Range	XX	10880 - Sonora-Mojave Mixed Salt Desert Scrub	27.5	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Barry M Goldwater Range	4	11080 - Sonora-Mojave Semi-Desert Chaparral	1.1	0.0%	40.0%	0.0%	0.0%	0.0%	60.0%	0.0%	0.0%
Barry M Goldwater Range	XX	11 - Open Water	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Barry M Goldwater Range Total		**-**	**379,348.1**	**10.6%**	**58.8%**	**10.4%**	**0.1%**	**19.9%**	**0.2%**	**0.0%**	**0.0%**
Beale AFB	1	11140 - California Lower Montane Blue Oak-Foothill Pine Woodland and Savanna	8,075.1	0.0%	74.2%	0.0%	0.2%	0.0%	25.6%	0.0%	0.0%
Beale AFB	2	11290 - California Central Valley and Southern Coastal Grassland	7,094.1	0.0%	0.0%	84.8%	0.3%	0.0%	14.9%	0.0%	0.0%
Beale AFB	4	11050 - Northern and Central California Dry-Mesic Chaparral	6,058.6	0.0%	0.0%	89.3%	0.0%	0.3%	10.3%	0.0%	0.0%
Beale AFB	XX	11510 - California Central Valley Riparian Woodland and Shrubland	1,101.8	0.0%	0.0%	61.1%	2.7%	0.0%	36.1%	0.0%	0.0%
Beale AFB	XX	31 - Barren-Rock/Sand/Clay	868.3	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Beale AFB	4	10970 - California Mesic Chaparral	130.3	0.0%	0.0%	83.5%	0.0%	0.0%	16.5%	0.0%	0.0%
Beale AFB	XX	11 - Open Water	64.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Beale AFB	1	11120 - California Central Valley Mixed Oak Savanna	42.0	0.0%	0.0%	96.4%	0.1%	0.0%	3.4%	0.0%	0.0%
Beale AFB	XX	10880 - Sonora-Mojave Mixed Salt Desert Scrub	4.7	0.0%	0.0%	80.9%	0.0%	4.8%	14.3%	0.0%	0.0%
Beale AFB	1	10290 - Mediterranean California Mixed Oak Woodland	1.3	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Beale AFB	2	11630 - Pacific Coastal Marsh Systems	0.5	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Beale AFB	1	10430 - Mediterranean California Mixed Evergreen Forest	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Beale AFB Total		**-**	**23,441.9**	**0.0%**	**25.6%**	**52.3%**	**0.3%**	**3.8%**	**17.8%**	**0.0%**	**0.3%**
Buckley AFB	2	11490 - Western Great Plains Shortgrass Prairie	2,455.2	0.0%	41.3%	0.0%	16.0%	0.0%	42.7%	0.0%	0.0%
Buckley AFB	4	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	759.4	0.0%	0.0%	22.7%	8.7%	0.0%	68.5%	0.0%	0.0%
Buckley AFB	1	11620 - Western Great Plains Floodplain Systems	71.6	0.0%	82.9%	0.0%	6.2%	0.0%	10.9%	0.0%	0.0%
Buckley AFB	3	11590 - Rocky Mountain Montane Riparian Systems	6.8	75.1%	0.0%	0.0%	9.8%	0.0%	15.1%	0.0%	0.0%
Buckley AFB	XX	31 - Barren-Rock/Sand/Clay	1.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Buckley AFB	XX	11 - Open Water	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Buckley AFB	2	10940 - Western Great Plains Sandhill Steppe	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Buckley AFB	2	11320 - Central Mixedgrass Prairie	0.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Buckley AFB	2	11470 - Western Great Plains Foothill and Piedmont Grassland	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Buckley AFB Total		-	**3,297.9**	**0.2%**	**32.5%**	**5.2%**	**14.1%**	**0.1%**	**47.8%**	**0.0%**	**0.0%**
Cannon AFB	2	11490 - Western Great Plains Shortgrass Prairie	4,304.2	29.4%	0.0%	0.0%	15.7%	0.2%	54.7%	0.0%	0.0%
Cannon AFB	XX	31 - Barren-Rock/Sand/Clay	25.6	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Cannon AFB	XX	11 - Open Water	15.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cannon AFB	2	14951 - Western Great Plains Depressional Wetland Systems-Playa	13.3	8.4%	0.0%	0.0%	0.0%	0.0%	91.6%	0.0%	0.0%
Cannon AFB	3	11190 - Southern Rocky Mountain Juniper Woodland and Savanna	0.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Cannon AFB	2	11480 - Western Great Plains Sand Prairie	0.2	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Cannon AFB Total		-	**4,359.5**	**29.0%**	**0.0%**	**0.0%**	**15.5%**	**0.8%**	**54.3%**	**0.0%**	**0.4%**
Cape Canaveral SFS	1	14530 - Central Florida Pine Flatwoods	7,107.1	0.0%	53.4%	0.0%	0.7%	0.0%	45.9%	0.0%	0.0%
Cape Canaveral SFS	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	1,645.0	91.1%	0.0%	0.0%	0.9%	0.0%	8.0%	0.0%	0.0%
Cape Canaveral SFS	2	13870 - Florida Peninsula Inland Scrub	1,489.0	0.0%	0.0%	27.5%	0.7%	0.0%	71.8%	0.0%	0.0%
Cape Canaveral SFS	2	14890 - Floridian Highlands Freshwater Marsh	1,278.8	0.0%	0.0%	91.9%	0.7%	0.0%	7.4%	0.0%	0.0%
Cape Canaveral SFS	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	1,278.5	88.9%	0.0%	0.0%	1.2%	0.0%	9.9%	0.0%	0.0%
Cape Canaveral SFS	2	14250 - Florida Dry Prairie	883.3	0.0%	88.8%	0.0%	0.9%	0.0%	10.3%	0.0%	0.0%
Cape Canaveral SFS	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	822.2	0.0%	0.0%	91.5%	1.4%	0.0%	7.1%	0.0%	0.0%
Cape Canaveral SFS	1	13370 - Southeast Florida Coastal Strand and Maritime Hammock	653.6	0.0%	25.4%	0.0%	0.8%	0.0%	73.8%	0.0%	0.0%
Cape Canaveral SFS	XX	11 - Open Water	489.7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Cape Canaveral SFS	1	13560 - Florida Longleaf Pine Sandhill	305.6	0.0%	30.8%	0.0%	0.9%	0.0%	68.3%	0.0%	0.0%
Cape Canaveral SFS	1	14600 - Southern Coastal Plain Nonriverine Cypress Dome	68.4	0.0%	86.7%	0.0%	0.3%	0.0%	13.0%	0.0%	0.0%
Cape Canaveral SFS	XX	31 - Barren-Rock/Sand/Clay	40.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Cape Canaveral SFS	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	36.5	0.0%	0.0%	88.2%	0.0%	0.0%	11.8%	0.0%	0.0%
Cape Canaveral SFS Total		-	**16,098.5**	**16.4%**	**30.4%**	**14.7%**	**0.8%**	**0.3%**	**34.4%**	**0.0%**	**3.0%**
Cape Cod AFS	1	13240 - Northern Atlantic Coastal Plain Hardwood Forest	64.6	0.0%	0.0%	71.5%	0.0%	0.0%	28.5%	0.0%	0.0%
Cape Cod AFS	1	13550 - Northern Atlantic Coastal Plain Pitch Pine Barrens	35.3	0.0%	61.3%	0.0%	0.4%	0.0%	38.3%	0.0%	0.0%
Cape Cod AFS	1	14360 - Northern Atlantic Coastal Plain Dune and Swale	0.4	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cape Cod AFS Total		-	**100.3**	**0.0%**	**21.6%**	**46.5%**	**0.1%**	**0.0%**	**31.8%**	**0.0%**	**0.0%**
Cheyenne Mountain SFS	1	10542 - Southern Rocky Mountain Ponderosa Pine Woodland-North	250.5	0.0%	78.3%	0.0%	0.0%	0.0%	21.7%	0.0%	0.0%
Cheyenne Mountain SFS	4	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	156.9	0.0%	0.0%	74.0%	0.3%	0.0%	25.7%	0.0%	0.0%
Cheyenne Mountain SFS	1	10510 - Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland	50.1	0.0%	96.4%	0.0%	0.0%	0.0%	3.6%	0.0%	0.0%
Cheyenne Mountain SFS	2	11470 - Western Great Plains Foothill and Piedmont Grassland	39.6	15.8%	0.0%	0.0%	0.0%	0.0%	84.2%	0.0%	0.0%
Cheyenne Mountain SFS	3	10520 - Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	18.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cheyenne Mountain SFS	1	11172 - Southern Rocky Mountain Ponderosa Pine Savanna-North	9.2	0.0%	0.0%	66.3%	0.0%	0.0%	33.7%	0.0%	0.0%
Cheyenne Mountain SFS	1	10540 - Southern Rocky Mountain Ponderosa Pine Woodland	6.4	0.0%	96.5%	0.0%	0.0%	0.0%	3.5%	0.0%	0.0%
Cheyenne Mountain SFS	3	11590 - Rocky Mountain Montane Riparian Systems	5.5	67.5%	0.0%	0.0%	0.0%	0.0%	32.5%	0.0%	0.0%
Cheyenne Mountain SFS	3	10590 - Southern Rocky Mountain Pinyon-Juniper Woodland	1.5	84.9%	0.0%	0.0%	0.0%	0.0%	15.1%	0.0%	0.0%
Cheyenne Mountain SFS	1	10610 - Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	1.5	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cheyenne Mountain SFS	2	11490 - Western Great Plains Shortgrass Prairie	1.1	20.0%	0.0%	0.0%	0.0%	0.0%	80.0%	0.0%	0.0%
Cheyenne Mountain SFS	4	10110 - Rocky Mountain Aspen Forest and Woodland	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cheyenne Mountain SFS	1	10541 - Southern Rocky Mountain Ponderosa Pine Woodland-South	0.2	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cheyenne Mountain SFS	5	11530 - Inter-Mountain Basins Greasewood Flat	0.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Cheyenne Mountain SFS Total		-	**541.2**	**2.2%**	**50.0%**	**22.6%**	**0.1%**	**0.0%**	**25.2%**	**0.0%**	**0.0%**
Clear SFS	3	16041 - Western North American Boreal Mesic Black Spruce Forest - Boreal	4,354.4	91.2%	0.0%	0.0%	0.0%	0.0%	8.8%	0.0%	0.0%
Clear SFS	4	16030 - Western North American Boreal White Spruce-Hardwood Forest	2,827.9	96.1%	0.0%	0.0%	0.0%	0.0%	3.9%	0.0%	0.0%
Clear SFS	4	16211 - Western North American Boreal Black Spruce Dwarf-tree Peatland - Boreal Complex	2,310.9	99.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Clear SFS	4	16050 - Western North American Boreal Mesic Birch-Aspen Forest	435.8	99.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Clear SFS	5	16141 - Western North American Boreal Montane Floodplain Forest and Shrubland - Boreal	427.1	0.0%	99.9%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Clear SFS	XX	11 - Open Water	351.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Clear SFS	3	16061 - Western North American Boreal Dry Aspen-Steppe Bluff - Lower Elevations	173.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	5	16150 - Western North American Boreal Lowland Large River Floodplain Forest and Shrubland	147.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	XX	31 - Barren-Rock/Sand/Clay	142.5	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Clear SFS	4	16280 - Western North American Boreal Low Shrub-Tussock Tundra	140.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	XX	16320 - Western North American Boreal Alpine Talus and Bedrock	66.6	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Clear SFS	4	16300 - Western North American Boreal Wet Black Spruce-Tussock Woodland	37.7	99.4%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
Clear SFS	5	16240 - Western North American Boreal Deciduous Shrub Swamp	33.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Clear SFS	5	16170 - Western North American Boreal Shrub and Herbaceous Floodplain Wetland	17.1	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	5	16460 - Alaskan Pacific Maritime Western Hemlock Forest	3.6	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Clear SFS	5	16090 - Alaska Sub-Boreal Mesic Subalpine Alder Shrubland	2.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	5	16110 - Western North American Sub-boreal Mesic Bluejoint Meadow	2.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	3	16120 - Western North American Boreal Dry Grassland	1.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	3	16160 - Western North American Boreal Riparian Stringer Forest and Shrubland	1.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	5	16790 - Alaska Sub-boreal White Spruce-Hardwood Forest	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Clear SFS	4	16011 - Western North American Boreal Treeline White Spruce Woodland - Boreal	0.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	5	16990 - Alaska Arctic Mesic Herbaceous Meadow	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS	5	16371 - Western North American Boreal Alpine Floodplain - Lower Elevations	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clear SFS Total		**-**	**11,480.6**	**86.9%**	**3.7%**	**0.1%**	**0.0%**	**1.8%**	**4.4%**	**0.0%**	**3.1%**
Columbus AFB	1	14550 - East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods	2,191.9	0.0%	0.0%	30.7%	3.8%	0.0%	65.5%	0.0%	0.0%
Columbus AFB	3	13250 - East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest	1,226.2	0.0%	0.0%	2.2%	3.2%	0.0%	94.7%	0.0%	0.0%
Columbus AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	782.5	29.0%	0.0%	0.0%	10.1%	0.0%	60.8%	0.0%	0.0%
Columbus AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	577.4	0.0%	0.0%	49.4%	1.6%	0.0%	49.0%	0.0%	0.0%
Columbus AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	295.0	0.0%	38.6%	0.0%	28.9%	0.0%	32.4%	0.0%	0.0%
Columbus AFB	1	13070 - East Gulf Coastal Plain Northern Dry Upland Hardwood Forest	87.0	0.0%	0.0%	38.9%	2.8%	0.0%	58.2%	0.0%	0.0%
Columbus AFB	1	13570 - Southern Coastal Plain Mesic Slope Forest	60.9	0.0%	0.0%	27.3%	0.4%	0.0%	72.4%	0.0%	0.0%
Columbus AFB	1	13490 - East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland	47.8	0.0%	0.0%	87.8%	3.7%	0.0%	8.5%	0.0%	0.0%
Columbus AFB	1	14300 - Southern Coastal Plain Blackland Prairie and Woodland	16.9	0.0%	0.0%	44.4%	14.5%	0.0%	41.1%	0.0%	0.0%
Columbus AFB	1	13720 - East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest	4.0	0.0%	0.0%	89.9%	5.5%	0.0%	4.6%	0.0%	0.0%
Columbus AFB	XX	11 - Open Water	3.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Columbus AFB Total		**-**	**5,292.9**	**4.3%**	**2.2%**	**20.6%**	**5.7%**	**0.0%**	**67.2%**	**0.0%**	**0.1%**
Dare County Range	1	14520 - Atlantic Coastal Plain Peatland Pocosin and Canebrake	37,686.0	0.0%	97.1%	0.0%	0.3%	0.0%	2.6%	0.0%	0.0%
Dare County Range	4	15010 - Central Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest	7,535.7	0.0%	95.9%	0.0%	0.0%	0.0%	4.1%	0.0%	0.0%
Dare County Range	XX	11 - Open Water	891.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Dare County Range	1	13570 - Southern Coastal Plain Mesic Slope Forest	233.0	0.0%	0.0%	98.7%	0.0%	0.0%	1.3%	0.0%	0.0%
Dare County Range	3	13610 - Central Atlantic Coastal Plain Maritime Forest	142.8	0.0%	0.0%	97.7%	0.5%	0.0%	1.9%	0.0%	0.0%
Dare County Range	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	113.8	84.6%	0.0%	0.0%	2.3%	0.0%	13.1%	0.0%	0.0%
Dare County Range	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	23.3	50.0%	0.0%	0.0%	35.3%	0.0%	14.7%	0.0%	0.0%
Dare County Range Total		**-**	**46,626.0**	**0.2%**	**94.0%**	**0.8%**	**0.2%**	**0.0%**	**2.8%**	**0.0%**	**1.9%**
Davis Monthan AFB	5	10900 - Sonoran Granite Outcrop Desert Scrub	8,182.4	0.0%	37.6%	0.0%	0.0%	0.0%	62.4%	0.0%	0.0%
Davis Monthan AFB	4	10910 - Sonoran Mid-Elevation Desert Scrub	823.0	0.0%	0.0%	24.9%	0.0%	0.0%	75.1%	0.0%	0.0%
Davis Monthan AFB	5	10820 - Mojave Mid-Elevation Mixed Desert Scrub	801.4	0.0%	80.6%	0.0%	0.0%	0.0%	19.4%	0.0%	0.0%
Davis Monthan AFB	5	11552 - North American Warm Desert Riparian Systems-Stringers	527.8	0.0%	0.0%	60.1%	0.0%	0.0%	39.9%	0.0%	0.0%
Davis Monthan AFB	1	11550 - North American Warm Desert Riparian Systems	130.3	0.0%	0.0%	32.8%	1.5%	0.0%	65.7%	0.0%	0.0%
Davis Monthan AFB	XX	31 - Barren-Rock/Sand/Clay	45.6	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Davis Monthan AFB	5	11090 - Sonoran Paloverde-Mixed Cacti Desert Scrub	35.4	0.0%	0.0%	98.5%	0.0%	0.0%	1.5%	0.0%	0.0%
Davis Monthan AFB	4	11080 - Sonora-Mojave Semi-Desert Chaparral	5.6	0.0%	5.6%	0.0%	0.0%	0.0%	94.4%	0.0%	0.0%
Davis Monthan AFB	1	10610 - Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	0.5	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Davis Monthan AFB	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	0.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Davis Monthan AFB Total		**-**	**10,552.2**	**0.0%**	**35.3%**	**5.7%**	**0.0%**	**0.4%**	**58.6%**	**0.0%**	**0.0%**
Dobbins ARB	1	13680 - Southern Piedmont Dry Oak(-Pine) Forest	1,818.2	0.0%	0.0%	7.5%	0.4%	0.0%	92.2%	0.0%	0.0%
Dobbins ARB	3	13160 - Southern Piedmont Mesic Forest	610.5	0.0%	0.0%	28.6%	1.9%	0.0%	69.4%	0.0%	0.0%
Dobbins ARB	3	14720 - Central Interior and Appalachian Riparian Systems	90.4	0.0%	52.9%	0.0%	0.0%	0.0%	47.1%	0.0%	0.0%
Dobbins ARB	XX	11 - Open Water	6.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Dobbins ARB Total		**-**	**2,525.1**	**0.0%**	**1.9%**	**12.3%**	**0.7%**	**0.0%**	**84.8%**	**0.0%**	**0.2%**
Dover AFB	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	2,606.3	0.0%	0.0%	2.3%	3.8%	0.0%	93.9%	0.0%	0.0%
Dover AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	194.1	11.0%	0.0%	0.0%	7.4%	0.0%	81.5%	0.0%	0.0%
Dover AFB	1	13240 - Northern Atlantic Coastal Plain Hardwood Forest	144.2	0.0%	0.0%	21.5%	2.5%	0.0%	76.0%	0.0%	0.0%
Dover AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	79.0	0.0%	0.0%	4.6%	8.1%	0.0%	87.2%	0.0%	0.0%
Dover AFB	1	13550 - Northern Atlantic Coastal Plain Pitch Pine Barrens	62.8	0.0%	0.0%	0.0%	1.0%	0.0%	98.9%	0.0%	0.0%
Dover AFB	1	13790 - Northern Atlantic Coastal Plain Maritime Forest	56.1	0.0%	0.0%	13.7%	2.6%	0.0%	83.6%	0.0%	0.0%
Dover AFB	1	14360 - Northern Atlantic Coastal Plain Dune and Swale	21.3	0.0%	0.0%	77.4%	1.0%	0.0%	21.5%	0.0%	0.0%
Dover AFB	XX	11 - Open Water	6.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Dover AFB Total		**-**	**3,170.0**	**0.7%**	**0.0%**	**3.8%**	**4.0%**	**0.0%**	**91.4%**	**0.0%**	**0.2%**
Dugway Proving Ground	XX	31 - Barren-Rock/Sand/Clay	486,366.9	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Dugway Proving Ground	5	11530 - Inter-Mountain Basins Greasewood Flat	135,369.5	97.4%	0.0%	0.0%	0.1%	1.4%	1.1%	0.0%	0.0%
Dugway Proving Ground	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	126,398.6	0.0%	98.9%	0.0%	0.1%	0.9%	0.2%	0.0%	0.0%
Dugway Proving Ground	4	10790 - Great Basin Xeric Mixed Sagebrush Shrubland	26,692.9	0.0%	0.0%	96.5%	0.1%	3.4%	0.0%	0.0%	0.0%
Dugway Proving Ground	4	10804 - Inter-Mountain Basins Big Sagebrush Shrubland-Upland	16,123.8	0.0%	97.1%	0.0%	0.1%	0.2%	2.7%	0.0%	0.0%
Dugway Proving Ground	4	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	4,473.2	0.0%	0.0%	99.7%	0.0%	0.3%	0.0%	0.0%	0.0%
Dugway Proving Ground	5	10190 - Great Basin Pinyon-Juniper Woodland	2,164.9	97.3%	0.0%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%
Dugway Proving Ground	4	10803 - Inter-Mountain Basins Big Sagebrush Shrubland-Semi-Desert	2,025.1	99.3%	0.0%	0.0%	0.0%	0.6%	0.1%	0.0%	0.0%
Dugway Proving Ground	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	1,601.1	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	5	11540 - Inter-Mountain Basins Montane Riparian Systems	374.1	0.0%	86.5%	0.0%	8.9%	0.1%	4.6%	0.0%	0.0%
Dugway Proving Ground	XX	11 - Open Water	151.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Dugway Proving Ground	4	11030 - Great Basin Semi-Desert Chaparral	64.7	73.5%	0.0%	0.0%	0.0%	26.5%	0.0%	0.0%	0.0%
Dugway Proving Ground	3	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	49.5	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	5	11590 - Rocky Mountain Montane Riparian Systems	9.1	97.6%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%
Dugway Proving Ground	1	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	6.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	3	10620 - Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	4.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	3	10160 - Colorado Plateau Pinyon-Juniper Woodland	3.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	5	11240 - Columbia Plateau Low Sagebrush Steppe	1.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	4	11350 - Inter-Mountain Basins Semi-Desert Grassland	1.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	4	11040 - Mogollon Chaparral	0.9	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	5	11270 - Inter-Mountain Basins Semi-Desert Shrub-Steppe	0.9	75.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%
Dugway Proving Ground	3	11150 - Inter-Mountain Basins Juniper Savanna	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dugway Proving Ground Total		**-**	**801,883.3**	**17.0%**	**17.6%**	**3.8%**	**0.0%**	**61.4%**	**0.3%**	**0.0%**	**0.0%**
Dyess AFB	1	11320 - Central Mixedgrass Prairie	2,585.7	0.0%	35.9%	0.0%	2.3%	0.0%	61.9%	0.0%	0.0%
Dyess AFB	2	15040 - Chihuahuan-Sonoran Desert Bottomland and Swale Grassland	1,866.5	0.0%	0.0%	16.2%	1.3%	0.0%	82.5%	0.0%	0.0%
Dyess AFB	1	11620 - Western Great Plains Floodplain Systems	826.5	0.0%	47.2%	0.0%	1.1%	0.1%	51.6%	0.0%	0.0%
Dyess AFB	2	14220 - Southern Blackland Tallgrass Prairie	45.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Dyess AFB	1	11110 - Western Great Plains Mesquite Woodland and Shrubland	31.3	0.0%	61.3%	0.0%	0.7%	0.0%	38.0%	0.0%	0.0%
Dyess AFB	XX	11 - Open Water	11.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Dyess AFB	1	13930 - Edwards Plateau Limestone Shrubland	0.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Dyess AFB Total		**-**	**5,367.0**	**0.0%**	**24.9%**	**5.6%**	**1.7%**	**0.0%**	**67.5%**	**0.0%**	**0.2%**
Edwards AFB	5	10870 - Sonora-Mojave Creosotebush-White Bursage Desert Scrub	171,879.7	97.6%	0.0%	0.0%	0.0%	0.2%	2.2%	0.0%	0.0%
Edwards AFB	XX	31 - Barren-Rock/Sand/Clay	87,112.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Edwards AFB	XX	10880 - Sonora-Mojave Mixed Salt Desert Scrub	17,353.5	0.0%	0.0%	95.3%	0.0%	0.3%	4.4%	0.0%	0.0%
Edwards AFB	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	15,058.8	0.0%	0.0%	0.0%	0.0%	79.8%	20.2%	0.0%	0.0%
Edwards AFB	5	10820 - Mojave Mid-Elevation Mixed Desert Scrub	9,952.9	0.0%	89.8%	0.0%	0.0%	0.3%	9.9%	0.0%	0.0%
Edwards AFB	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	4,189.3	0.0%	0.0%	0.0%	0.0%	76.1%	23.8%	0.0%	0.0%
Edwards AFB	5	11552 - North American Warm Desert Riparian Systems-Stringers	1,210.5	0.0%	0.0%	81.3%	0.7%	0.3%	17.7%	0.0%	0.0%
Edwards AFB	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	962.9	0.0%	0.7%	0.0%	0.0%	0.0%	99.3%	0.0%	0.0%
Edwards AFB	XX	11 - Open Water	244.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Edwards AFB	1	11550 - North American Warm Desert Riparian Systems	192.4	0.0%	13.1%	31.6%	0.2%	0.5%	54.7%	0.0%	0.0%
Edwards AFB	3	11520 - California Montane Riparian Systems	134.9	0.0%	99.8%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Edwards AFB	4	11350 - Inter-Mountain Basins Semi-Desert Grassland	47.6	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Edwards AFB	1	11130 - California Coastal Live Oak Woodland and Savanna	39.4	0.0%	73.3%	0.0%	0.0%	0.0%	26.7%	0.0%	0.0%
Edwards AFB	4	10800 - Inter-Mountain Basins Big Sagebrush Shrubland	18.0	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Edwards AFB	1	10280 - Mediterranean California Mesic Mixed Conifer Forest and Woodland	7.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Edwards AFB	1	10310 - California Montane Jeffrey Pine(-Ponderosa Pine) Woodland	1.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Edwards AFB	1	11180 - Southern California Oak Woodland and Savanna	0.0	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Edwards AFB Total		**-**	**308,404.9**	**54.4%**	**3.0%**	**5.7%**	**0.0%**	**33.3%**	**3.6%**	**0.0%**	**0.1%**
Eglin AFB	1	13560 - Florida Longleaf Pine Sandhill	339,142.0	0.0%	89.4%	0.0%	0.6%	0.0%	10.0%	0.0%	0.0%
Eglin AFB	1	14540 - East Gulf Coastal Plain Near-Coast Pine Flatwoods	37,506.6	0.0%	86.4%	0.0%	1.9%	0.0%	11.7%	0.0%	0.0%
Eglin AFB	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	36,464.4	0.0%	0.0%	98.5%	0.0%	0.0%	1.4%	0.0%	0.0%
Eglin AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	12,496.9	0.0%	93.1%	0.0%	1.0%	0.0%	6.0%	0.0%	0.0%
Eglin AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	10,816.4	94.4%	0.0%	0.0%	0.1%	0.0%	5.5%	0.0%	0.0%
Eglin AFB	1	13800 - East Gulf Coastal Plain Maritime Forest	8,684.1	0.0%	83.0%	0.0%	0.3%	0.0%	16.6%	0.0%	0.0%
Eglin AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	6,768.7	0.0%	0.0%	97.3%	0.1%	0.0%	2.6%	0.0%	0.0%
Eglin AFB	1	13490 - East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland	4,942.8	0.0%	0.0%	79.8%	0.1%	0.0%	20.1%	0.0%	0.0%
Eglin AFB	1	14600 - Southern Coastal Plain Nonriverine Cypress Dome	3,472.1	0.0%	97.7%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Eglin AFB	XX	31 - Barren-Rock/Sand/Clay	2,469.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Eglin AFB	XX	11 - Open Water	975.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Eglin AFB	2	14890 - Floridian Highlands Freshwater Marsh	900.3	0.0%	0.0%	20.8%	1.3%	0.0%	77.9%	0.0%	0.0%
Eglin AFB	1	14850 - East Gulf Coastal Plain Savanna and Wet Prairie	523.3	0.0%	96.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.0%
Eglin AFB	XX	14350 - East Gulf Coastal Plain Dune and Coastal Grassland	382.4	0.0%	72.7%	0.0%	0.1%	0.0%	27.2%	0.0%	0.0%
Eglin AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	99.1	98.2%	0.0%	0.0%	0.2%	0.0%	1.6%	0.0%	0.0%
Eglin AFB	1	14680 - Atlantic Coastal Plain Streamhead Seepage Swamp-Pocosin-Baygall	52.6	0.0%	0.0%	70.4%	1.3%	0.0%	28.4%	0.0%	0.0%
Eglin AFB	1	14530 - Central Florida Pine Flatwoods	35.6	0.0%	11.3%	0.0%	3.4%	0.0%	85.3%	0.0%	0.0%
Eglin AFB	1	13570 - Southern Coastal Plain Mesic Slope Forest	33.3	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eglin AFB	1	13300 - Southern Coastal Plain Dry Upland Hardwood Forest	23.3	0.0%	0.0%	79.0%	1.0%	0.0%	20.1%	0.0%	0.0%
Eglin AFB	1	13360 - Southwest Florida Coastal Strand and Maritime Hammock	3.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eglin AFB Total		**-**	**465,792.2**	**2.2%**	**77.0%**	**10.0%**	**0.6%**	**0.5%**	**9.4%**	**0.0%**	**0.2%**
Eielson AFB	4	16211 - Western North American Boreal Black Spruce Dwarf-tree Peatland - Boreal Complex	4,747.4	46.1%	0.0%	0.0%	1.6%	0.0%	52.4%	0.0%	0.0%
Eielson AFB	3	16041 - Western North American Boreal Mesic Black Spruce Forest - Boreal	3,295.1	71.7%	0.0%	0.0%	0.0%	0.0%	28.3%	0.0%	0.0%
Eielson AFB	4	16030 - Western North American Boreal White Spruce-Hardwood Forest	2,268.5	95.1%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%	0.0%
Eielson AFB	5	16141 - Western North American Boreal Montane Floodplain Forest and Shrubland - Boreal	2,069.0	0.0%	88.4%	0.0%	0.0%	0.0%	11.6%	0.0%	0.0%
Eielson AFB	XX	11 - Open Water	749.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Eielson AFB	4	16280 - Western North American Boreal Low Shrub-Tussock Tundra	519.8	99.5%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%
Eielson AFB	5	16170 - Western North American Boreal Shrub and Herbaceous Floodplain Wetland	398.5	0.0%	0.0%	99.7%	0.0%	0.0%	0.3%	0.0%	0.0%
Eielson AFB	5	16150 - Western North American Boreal Lowland Large River Floodplain Forest and Shrubland	252.6	98.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%
Eielson AFB	4	16050 - Western North American Boreal Mesic Birch-Aspen Forest	231.5	87.4%	0.0%	0.0%	0.0%	0.0%	12.6%	0.0%	0.0%
Eielson AFB	XX	31 - Barren-Rock/Sand/Clay	135.6	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Eielson AFB	5	16090 - Alaska Sub-Boreal Mesic Subalpine Alder Shrubland	73.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eielson AFB	XX	16320 - Western North American Boreal Alpine Talus and Bedrock	61.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Eielson AFB	4	16300 - Western North American Boreal Wet Black Spruce-Tussock Woodland	59.4	99.6%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%
Eielson AFB	3	16220 - Western North American Boreal Black Spruce Wet-Mesic Slope Woodland	40.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eielson AFB	5	16240 - Western North American Boreal Deciduous Shrub Swamp	20.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eielson AFB	4	16011 - Western North American Boreal Treeline White Spruce Woodland - Boreal	17.4	88.5%	0.0%	0.0%	0.0%	0.0%	11.5%	0.0%	0.0%
Eielson AFB	4	16101 - Western North American Boreal Mesic Scrub Birch-Willow Shrubland - Boreal	10.7	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Eielson AFB	5	16102 - Western North American Boreal Mesic Scrub Birch-Willow Shrubland - Alaska Sub-boreal	8.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eielson AFB	5	16460 - Alaskan Pacific Maritime Western Hemlock Forest	7.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Eielson AFB	3	16120 - Western North American Boreal Dry Grassland	2.9	53.8%	0.0%	0.0%	0.0%	0.0%	46.2%	0.0%	0.0%
Eielson AFB	5	16790 - Alaska Sub-boreal White Spruce-Hardwood Forest	1.3	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Eielson AFB	3	16061 - Western North American Boreal Dry Aspen-Steppe Bluff - Lower Elevations	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eielson AFB	XX	12 - Perennial Ice/Snow	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Eielson AFB	5	16110 - Western North American Sub-boreal Mesic Bluejoint Meadow	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Eielson AFB Total		**-**	**19,814.9**	**63.1%**	**9.2%**	**2.0%**	**0.0%**	**1.0%**	**20.9%**	**0.0%**	**3.8%**
Ellsworth AFB	2	11410 - Northwestern Great Plains Mixedgrass Prairie	4,747.4	46.1%	0.0%	0.0%	1.6%	0.0%	52.4%	0.0%	0.0%
Ellsworth AFB	2	11320 - Central Mixedgrass Prairie	1,106.0	85.1%	0.0%	0.0%	1.0%	0.2%	13.7%	0.0%	0.0%
Ellsworth AFB	2	10940 - Western Great Plains Sandhill Steppe	777.7	0.0%	98.8%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%
Ellsworth AFB	3	11620 - Western Great Plains Floodplain Systems	569.7	0.0%	0.0%	86.6%	1.2%	0.4%	11.8%	0.0%	0.0%
Ellsworth AFB	1	13850 - Western Great Plains Wooded Draw and Ravine	266.0	0.0%	0.0%	49.9%	1.7%	0.0%	48.4%	0.0%	0.0%
Ellsworth AFB	4	11250 - Inter-Mountain Basins Big Sagebrush Steppe	158.6	0.0%	92.5%	0.0%	0.7%	0.0%	6.8%	0.0%	0.0%
Ellsworth AFB	2	11490 - Western Great Plains Shortgrass Prairie	145.3	0.0%	96.8%	0.0%	0.8%	0.0%	2.4%	0.0%	0.0%
Ellsworth AFB	XX	31 - Barren-Rock/Sand/Clay	77.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Ellsworth AFB	XX	11 - Open Water	46.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Ellsworth AFB	2	14950 - Western Great Plains Depressional Wetland Systems	8.5	0.0%	0.0%	5.2%	0.0%	0.0%	94.8%	0.0%	0.0%
Ellsworth AFB	4	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	2.1	0.0%	89.6%	0.0%	10.4%	0.0%	0.0%	0.0%	0.0%
Ellsworth AFB	2	11390 - Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland	1.3	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ellsworth AFB	1	11480 - Western Great Plains Sand Prairie	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ellsworth AFB	1	11790 - Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna	0.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ellsworth AFB	XX	10070 - Western Great Plains Sparsely Vegetated Systems	0.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Ellsworth AFB	1	11791 - Northwestern Great Plains-Black Hills Ponderosa Pine Woodland and Savanna-Low	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ellsworth AFB Total		**-**	**7,908.0**	**39.6%**	**13.4%**	**7.9%**	**1.4%**	**1.1%**	**36.1%**	**0.0%**	**0.6%**
Fairchild AFB	5	10650 - Columbia Plateau Scabland Shrubland	3,705.1	0.0%	25.0%	0.0%	3.9%	0.2%	70.9%	0.0%	0.0%
Fairchild AFB	3	10470 - Northern Rocky Mountain Mesic Montane Mixed Conifer Forest	1,030.0	0.0%	93.9%	0.0%	0.0%	0.3%	5.8%	0.0%	0.0%
Fairchild AFB	3	10453 - Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest-Grand Fir	829.5	0.0%	96.8%	0.0%	0.0%	0.1%	3.1%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Fairchild AFB	4	10560 - Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland	625.3	99.1%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%
Fairchild AFB	3	11590 - Rocky Mountain Montane Riparian Systems	600.7	0.0%	52.4%	0.0%	8.1%	1.7%	37.9%	0.0%	0.0%
Fairchild AFB	1	10451 - Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest-Ponderosa Pine-	274.5	91.7%	0.0%	0.0%	0.1%	0.0%	8.3%	0.0%	0.0%
Fairchild AFB	4	11230 - Columbia Plateau Steppe and Grassland	96.1	0.0%	66.3%	0.0%	3.6%	0.2%	29.9%	0.0%	0.0%
Fairchild AFB	3	10452 - Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest-Larch	91.5	0.0%	99.3%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%
Fairchild AFB	5	11240 - Columbia Plateau Low Sagebrush Steppe	72.6	0.0%	60.2%	0.0%	9.2%	0.3%	30.3%	0.0%	0.0%
Fairchild AFB	4	11540 - Inter-Mountain Basins Montane Riparian Systems	57.0	0.0%	29.8%	0.0%	6.1%	0.1%	64.0%	0.0%	0.0%
Fairchild AFB	4	11250 - Inter-Mountain Basins Big Sagebrush Steppe	51.8	0.0%	75.5%	0.0%	3.0%	0.4%	21.0%	0.0%	0.0%
Fairchild AFB	2	11390 - Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland	28.8	79.8%	0.0%	0.0%	2.3%	0.0%	17.8%	0.0%	0.0%
Fairchild AFB	1	10530 - Northern Rocky Mountain Ponderosa Pine Woodland and Savanna	14.6	0.0%	0.0%	41.3%	1.9%	0.0%	56.8%	0.0%	0.0%
Fairchild AFB	XX	31 - Barren-Rock/Sand/Clay	7.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Fairchild AFB	4	10800 - Inter-Mountain Basins Big Sagebrush Shrubland	6.8	92.4%	0.0%	0.0%	3.2%	0.0%	4.4%	0.0%	0.0%
Fairchild AFB	2	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	3.6	0.0%	54.1%	0.0%	6.1%	0.0%	39.8%	0.0%	0.0%
Fairchild AFB	XX	11 - Open Water	2.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Fairchild AFB	5	11610 - Northern Rocky Mountain Conifer Swamp	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fairchild AFB	1	11660 - Middle Rocky Mountain Montane Douglas-fir Forest and Woodland	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fairchild AFB Total		**-**	**7,498.3**	**12.0%**	**43.6%**	**0.1%**	**2.8%**	**0.4%**	**41.1%**	**0.0%**	**0.0%**
FE Warren AFB	4	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	4,840.3	0.0%	67.2%	0.0%	0.8%	0.0%	32.0%	0.0%	0.0%
FE Warren AFB	2	11470 - Western Great Plains Foothill and Piedmont Grassland	748.2	60.7%	0.0%	0.0%	2.0%	0.0%	37.2%	0.0%	0.0%
FE Warren AFB	1	11620 - Western Great Plains Floodplain Systems	160.9	0.0%	82.7%	0.0%	6.8%	0.0%	10.5%	0.0%	0.0%
FE Warren AFB	XX	31 - Barren-Rock/Sand/Clay	63.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
FE Warren AFB	XX	11 - Open Water	31.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
FE Warren AFB	3	11590 - Rocky Mountain Montane Riparian Systems	26.9	90.9%	0.0%	0.0%	6.6%	0.0%	2.5%	0.0%	0.0%
FE Warren AFB	2	11490 - Western Great Plains Shortgrass Prairie	1.8	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
FE Warren AFB	1	10540 - Southern Rocky Mountain Ponderosa Pine Woodland	1.3	83.3%	0.0%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%
FE Warren AFB Total		**-**	**5,874.7**	**8.2%**	**57.7%**	**0.0%**	**1.1%**	**1.1%**	**31.4%**	**0.0%**	**0.5%**
Goodfellow AFB	1	11320 - Central Mixedgrass Prairie	1,210.1	0.0%	4.7%	0.0%	0.3%	0.0%	95.1%	0.0%	0.0%
Goodfellow AFB	1	11620 - Western Great Plains Floodplain Systems	0.7	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goodfellow AFB	2	14220 - Southern Blackland Tallgrass Prairie	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Goodfellow AFB	XX	11 - Open Water	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Goodfellow AFB	1	13830 - Edwards Plateau Limestone Savanna and Woodland	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Goodfellow AFB Total		**-**	**1,211.1**	**0.0%**	**4.7%**	**0.0%**	**0.3%**	**0.0%**	**95.0%**	**0.0%**	**0.0%**
Grand Forks AFB	2	14200 - Northern Tallgrass Prairie	4,731.3	0.0%	0.0%	0.8%	45.7%	0.0%	53.6%	0.0%	0.0%
Grand Forks AFB	XX	11 - Open Water	168.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Grand Forks AFB	2	14120 - North-Central Interior Sand and Gravel Tallgrass Prairie	100.5	0.0%	0.0%	0.0%	34.5%	0.0%	65.5%	0.0%	0.0%
Grand Forks AFB	3	14690 - Eastern Great Plains Floodplain Systems	96.5	0.0%	0.0%	34.3%	44.1%	0.0%	21.7%	0.0%	0.0%
Grand Forks AFB	1	13940 - North-Central Interior Oak Savanna	23.4	0.0%	63.8%	0.0%	34.3%	0.0%	1.9%	0.0%	0.0%
Grand Forks AFB	1	13850 - Western Great Plains Wooded Draw and Ravine	22.2	0.0%	0.0%	57.0%	33.0%	0.0%	10.0%	0.0%	0.0%
Grand Forks AFB	4	14820 - Great Plains Prairie Pothole	14.7	0.0%	7.6%	0.0%	86.4%	0.0%	6.1%	0.0%	0.0%
Grand Forks AFB	5	13140 - North-Central Interior Maple-Basswood Forest	7.1	0.0%	0.0%	6.3%	25.0%	0.0%	68.8%	0.0%	0.0%
Grand Forks AFB	3	14770 - Boreal Acidic Peatland Systems	2.2	80.0%	0.0%	0.0%	10.0%	0.0%	10.0%	0.0%	0.0%
Grand Forks AFB	1	13310 - Eastern Great Plains Tallgrass Aspen Parkland	1.1	0.0%	80.0%	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%
Grand Forks AFB Total		**-**	**5,167.7**	**0.0%**	**0.3%**	**1.6%**	**43.9%**	**0.0%**	**50.9%**	**0.0%**	**3.3%**
Hanscom AFB	1	13690 - Central Appalachian Dry Oak-Pine Forest	573.0	0.0%	0.0%	9.6%	0.4%	0.0%	89.9%	0.0%	0.0%
Hanscom AFB	5	13020 - Laurentian-Acadian Northern Hardwoods Forest	509.5	0.0%	0.0%	51.8%	32.5%	0.0%	15.7%	0.0%	0.0%
Hanscom AFB	3	14710 - Central Interior and Appalachian Floodplain Systems	454.7	0.0%	0.0%	51.0%	25.2%	0.0%	23.8%	0.0%	0.0%
Hanscom AFB	5	14790 - Central Interior and Appalachian Swamp Systems	252.3	0.0%	5.1%	0.0%	0.3%	0.0%	94.7%	0.0%	0.0%
Hanscom AFB	5	13700 - Appalachian (Hemlock-)Northern Hardwood Forest	123.9	0.0%	0.0%	24.3%	18.1%	0.0%	57.6%	0.0%	0.0%
Hanscom AFB	1	13790 - Northern Atlantic Coastal Plain Maritime Forest	29.4	0.0%	0.0%	87.0%	5.1%	0.0%	7.9%	0.0%	0.0%
Hanscom AFB	XX	31 - Barren-Rock/Sand/Clay	17.0	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Hanscom AFB	1	14360 - Northern Atlantic Coastal Plain Dune and Swale	13.2	0.0%	0.0%	35.1%	23.6%	0.0%	41.4%	0.0%	0.0%
Hanscom AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	12.8	35.1%	0.0%	0.0%	0.0%	0.0%	64.9%	0.0%	0.0%
Hanscom AFB	1	13240 - Northern Atlantic Coastal Plain Hardwood Forest	8.3	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Hanscom AFB	3	13660 - Laurentian-Acadian Pine-Hemlock-Hardwood Forest	8.3	0.0%	70.8%	0.0%	9.7%	0.0%	19.5%	0.0%	0.0%
Hanscom AFB	3	13770 - Central Appalachian Pine-Oak Rocky Woodland	7.1	0.0%	36.7%	0.0%	9.4%	0.0%	53.9%	0.0%	0.0%
Hanscom AFB	5	15180 - North-Central Interior Wet Flatwoods	6.7	0.0%	0.0%	24.4%	0.0%	0.0%	75.6%	0.0%	0.0%
Hanscom AFB	3	14720 - Central Interior and Appalachian Riparian Systems	5.4	0.0%	29.8%	0.0%	59.4%	0.0%	10.8%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Hanscom AFB	XX	11 - Open Water	2.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Hanscom AFB	5	14940 - Laurentian-Acadian Shrub-Herbaceous Wetland Systems	2.6	0.0%	0.0%	13.5%	0.0%	0.0%	86.5%	0.0%	0.0%
Hanscom AFB	5	13730 - Acadian Low-Elevation Spruce-Fir-Hardwood Forest	1.1	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hanscom AFB	5	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	1.1	0.0%	0.0%	59.8%	20.1%	0.0%	20.1%	0.0%	0.0%
Hanscom AFB Total		-	**2,029.2**	**0.2%**	**1.1%**	**30.3%**	**15.5%**	**0.8%**	**51.8%**	**0.0%**	**0.1%**
Hill AFB	4	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	2,993.6	0.0%	0.7%	9.6%	36.8%	0.0%	52.8%	0.0%	0.0%
Hill AFB	4	11350 - Inter-Mountain Basins Semi-Desert Grassland	2,550.6	1.6%	0.0%	0.0%	20.8%	0.2%	77.5%	0.0%	0.0%
Hill AFB	3	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	1,195.7	0.0%	0.7%	0.0%	22.3%	0.0%	77.0%	0.0%	0.0%
Hill AFB	4	10804 - Inter-Mountain Basins Big Sagebrush Shrubland-Upland	484.3	0.0%	97.2%	0.0%	0.9%	0.0%	1.9%	0.0%	0.0%
Hill AFB	4	10790 - Great Basin Xeric Mixed Sagebrush Shrubland	154.4	0.0%	0.0%	96.7%	0.0%	2.0%	1.3%	0.0%	0.0%
Hill AFB	5	10550 - Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland	153.2	0.0%	97.5%	0.0%	0.0%	0.3%	2.2%	0.0%	0.0%
Hill AFB	XX	31 - Barren-Rock/Sand/Clay	75.4	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Hill AFB	5	11530 - Inter-Mountain Basins Greasewood Flat	49.9	90.5%	0.0%	0.0%	3.7%	0.4%	5.3%	0.0%	0.0%
Hill AFB	5	10190 - Great Basin Pinyon-Juniper Woodland	41.4	88.7%	0.0%	0.0%	0.0%	0.0%	11.3%	0.0%	0.0%
Hill AFB	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	34.0	0.0%	96.3%	0.0%	0.0%	0.3%	3.3%	0.0%	0.0%
Hill AFB	4	11261 - Inter-Mountain Basins Montane Sagebrush Steppe-Mountain Big Sagebrush	32.1	0.0%	65.0%	0.0%	0.0%	0.0%	35.0%	0.0%	0.0%
Hill AFB	3	10120 - Rocky Mountain Bigtooth Maple Ravine Woodland	25.7	63.1%	0.0%	0.0%	10.1%	0.0%	26.8%	0.0%	0.0%
Hill AFB	1	10110 - Rocky Mountain Aspen Forest and Woodland	2.6	0.0%	82.1%	0.0%	0.0%	0.0%	17.9%	0.0%	0.0%
Hill AFB	4	10110 - Rocky Mountain Aspen Forest and Woodland	22.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	3	11600 - Rocky Mountain Subalpine/Upper Montane Riparian Systems	6.3	50.9%	0.0%	0.0%	0.0%	14.0%	35.1%	0.0%	0.0%
Hill AFB	5	11600 - Rocky Mountain Subalpine/Upper Montane Riparian Systems	16.1	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	5	11540 - Inter-Mountain Basins Montane Riparian Systems	20.8	0.0%	32.2%	0.0%	32.6%	0.0%	35.2%	0.0%	0.0%
Hill AFB	1	10520 - Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	13.8	96.8%	0.0%	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%
Hill AFB	3	11660 - Middle Rocky Mountain Montane Douglas-fir Forest and Woodland	8.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	3	11590 - Rocky Mountain Montane Riparian Systems	7.1	0.0%	68.0%	0.0%	0.0%	0.0%	32.0%	0.0%	0.0%
Hill AFB	5	11590 - Rocky Mountain Montane Riparian Systems	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Hill AFB	1	10612 - Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland-High Elevation	7.2	0.0%	90.1%	0.0%	0.0%	0.0%	9.9%	0.0%	0.0%
Hill AFB	4	11250 - Inter-Mountain Basins Big Sagebrush Steppe	7.2	0.0%	50.6%	0.0%	0.0%	0.0%	49.4%	0.0%	0.0%
Hill AFB	3	11072 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland-Patchy	6.9	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	5	10820 - Mojave Mid-Elevation Mixed Desert Scrub	3.5	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	3	10620 - Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	3.3	0.0%	93.3%	0.0%	0.0%	0.0%	6.7%	0.0%	0.0%
Hill AFB	1	10611 - Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland-Low Elevation	2.5	0.0%	97.0%	0.0%	0.0%	0.0%	3.0%	0.0%	0.0%
Hill AFB	3	10460 - Northern Rocky Mountain Subalpine Woodland and Parkland	2.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	1	10510 - Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland	1.8	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	1	10610 - Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	1.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	XX	11 - Open Water	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Hill AFB	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	0.8	0.0%	0.0%	0.0%	0.0%	47.5%	52.5%	0.0%	0.0%
Hill AFB	4	11030 - Great Basin Semi-Desert Chaparral	0.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	3	11071 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland -Continuous	0.8	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Hill AFB	5	11610 - Northern Rocky Mountain Conifer Swamp	0.7	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	5	10490 - Rocky Mountain Foothill Limber Pine-Juniper Woodland	0.7	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	4	10802 - Inter-Mountain Basins Big Sagebrush Shrubland-Wyoming Big Sagebrush	0.6	94.9%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	0.0%
Hill AFB	3	10640 - Colorado Plateau Mixed Low Sagebrush Shrubland	0.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Hill AFB	XX	10060 - Rocky Mountain Alpine/Montane Sparsely Vegetated Systems	0.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Hill AFB	1	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	5	11240 - Columbia Plateau Low Sagebrush Steppe	0.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	4	10803 - Inter-Mountain Basins Big Sagebrush Shrubland-Semi-Desert	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB	3	11150 - Inter-Mountain Basins Juniper Savanna	0.0	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hill AFB Total		-	**7,930.4**	**2.0%**	**9.8%**	**5.7%**	**24.1%**	**1.1%**	**57.2%**	**0.0%**	**0.0%**
Holloman AFB	4	10804 - Inter-Mountain Basins Big Sagebrush Shrubland-Upland	15,665.8	0.0%	99.3%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
Holloman AFB	4	10803 - Inter-Mountain Basins Big Sagebrush Shrubland-Semi-Desert	15,237.5	76.9%	0.0%	0.0%	0.0%	0.2%	22.9%	0.0%	0.0%
Holloman AFB	XX	31 - Barren-Rock/Sand/Clay	14,692.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Holloman AFB	3	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	2,970.6	87.4%	0.0%	0.0%	0.0%	2.2%	10.3%	0.0%	0.0%
Holloman AFB	5	11550 - North American Warm Desert Riparian Systems	701.9	75.0%	0.0%	0.0%	1.4%	0.0%	23.6%	0.0%	0.0%
Holloman AFB	2	10760 - Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	587.9	0.0%	99.4%	0.0%	0.2%	0.2%	0.2%	0.0%	0.0%
Holloman AFB	5	11002 - Chihuahuan Mixed Desert and Thorn Scrub-Shrubland	461.6	96.0%	0.0%	0.0%	0.0%	0.2%	3.7%	0.0%	0.0%
Holloman AFB	4	11220 - Chihuahuan Gypsophilous Grassland and Steppe	245.0	0.0%	99.9%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Holloman AFB	XX	11 - Open Water	126.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Holloman AFB	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	59.7	0.0%	0.0%	0.0%	0.0%	16.8%	83.2%	0.0%	0.0%
Holloman AFB	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	46.6	0.0%	0.0%	0.0%	0.0%	99.5%	0.5%	0.0%	0.0%
Holloman AFB	XX	11003 - Chihuahuan Mixed Desert and Thorn Scrub-Steppe	42.0	99.5%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
Holloman AFB	2	11350 - Inter-Mountain Basins Semi-Desert Grassland	39.7	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Holloman AFB	5	11330 - Chihuahuan Sandy Plains Semi-Desert Grassland	37.1	0.0%	0.0%	13.2%	0.0%	0.0%	86.8%	0.0%	0.0%
Holloman AFB	5	11530 - Inter-Mountain Basins Greasewood Flat	7.6	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Holloman AFB	3	11590 - Rocky Mountain Montane Riparian Systems	1.8	0.0%	87.5%	0.0%	0.0%	0.0%	12.5%	0.0%	0.0%
Holloman AFB Total		**-**	**50,924.0**	**30.1%**	**32.2%**	**0.0%**	**0.0%**	**29.2%**	**8.2%**	**0.0%**	**0.2%**
Homestead AFB	1	14460 - South Florida Pine Flatwoods	1,052.1	0.0%	4.2%	0.0%	5.8%	0.0%	89.9%	0.0%	0.0%
Homestead AFB	2	14830 - South Florida Everglades Sawgrass Marsh	436.8	26.9%	0.0%	0.0%	24.0%	0.0%	49.1%	0.0%	0.0%
Homestead AFB	1	13600 - South Florida Pine Rockland	190.8	0.0%	3.0%	0.0%	12.6%	0.0%	84.3%	0.0%	0.0%
Homestead AFB	5	14780 - Caribbean Swamp Systems	184.7	67.3%	0.0%	0.0%	21.5%	0.0%	11.3%	0.0%	0.0%
Homestead AFB	XX	11 - Open Water	106.4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Homestead AFB	2	13870 - Florida Peninsula Inland Scrub	4.6	0.0%	0.0%	48.0%	50.7%	0.0%	1.3%	0.0%	0.0%
Homestead AFB	2	14250 - Florida Dry Prairie	3.9	0.0%	47.4%	0.0%	47.0%	0.0%	5.6%	0.0%	0.0%
Homestead AFB	1	14470 - South Florida Cypress Dome	1.7	0.0%	74.4%	0.0%	25.6%	0.0%	0.0%	0.0%	0.0%
Homestead AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	0.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Homestead AFB	3	14700 - Caribbean Coastal Wetland Systems	0.0	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Homestead AFB Total		**-**	**1,981.7**	**12.2%**	**2.7%**	**0.1%**	**11.8%**	**0.0%**	**67.8%**	**0.0%**	**5.4%**
JB Andrews	1	13240 - Northern Atlantic Coastal Plain Hardwood Forest	3,728.1	0.0%	0.0%	57.9%	13.7%	0.0%	28.4%	0.0%	0.0%
JB Andrews	5	13700 - Appalachian (Hemlock-)Northern Hardwood Forest	1,765.5	0.0%	0.0%	4.6%	0.9%	0.0%	94.6%	0.0%	0.0%
JB Andrews	3	13770 - Central Appalachian Pine-Oak Rocky Woodland	1,616.7	0.0%	4.2%	0.0%	0.2%	0.0%	95.7%	0.0%	0.0%
JB Andrews	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	36.8	91.2%	0.0%	0.0%	3.6%	0.0%	5.2%	0.0%	0.0%
JB Andrews	3	14720 - Central Interior and Appalachian Riparian Systems	25.0	0.0%	80.2%	0.0%	0.5%	0.0%	19.4%	0.0%	0.0%
JB Andrews	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	17.9	0.0%	0.0%	80.1%	18.6%	0.0%	1.2%	0.0%	0.0%
JB Andrews	XX	11 - Open Water	17.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
JB Andrews	1	13680 - Southern Piedmont Dry Oak(-Pine) Forest	4.0	0.0%	0.0%	16.7%	16.7%	0.0%	66.7%	0.0%	0.0%
JB Andrews	1	13690 - Central Appalachian Dry Oak-Pine Forest	3.8	0.0%	0.0%	82.4%	0.0%	0.0%	17.6%	0.0%	0.0%
JB Andrews	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	3.4	0.0%	61.1%	0.0%	38.9%	0.0%	0.0%	0.0%	0.0%
JB Andrews	1	13550 - Northern Atlantic Coastal Plain Pitch Pine Barrens	3.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Andrews	3	14710 - Central Interior and Appalachian Floodplain Systems	2.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
JB Andrews	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	1.8	0.0%	0.0%	14.8%	0.0%	0.0%	85.2%	0.0%	0.0%
JB Andrews	2	14000 - Central Appalachian Alkaline Glade and Woodland	1.8	0.0%	0.0%	12.5%	0.0%	0.0%	87.5%	0.0%	0.0%
JB Andrews	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	1.6	0.0%	0.0%	72.8%	0.0%	0.0%	27.2%	0.0%	0.0%
JB Andrews	1	13030 - Northeastern Interior Dry-Mesic Oak Forest	0.7	0.0%	0.0%	37.9%	0.0%	0.0%	62.1%	0.0%	0.0%
JB Andrews Total		**-**	**7,230.7**	**0.5%**	**1.3%**	**31.3%**	**7.4%**	**0.0%**	**59.3%**	**0.0%**	**0.2%**
JB Charleston	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	10,116.8	0.0%	0.0%	48.2%	1.4%	0.0%	50.4%	0.0%	0.0%
JB Charleston	1	14500 - Southern Atlantic Coastal Plain Wet Pine Savanna and Flatwoods	5,614.6	0.0%	0.0%	66.0%	0.4%	0.0%	33.6%	0.0%	0.0%
JB Charleston	1	14590 - Atlantic Coastal Plain Clay-Based Carolina Bay Wetland	1,349.6	0.0%	99.8%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
JB Charleston	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	1,262.1	0.0%	0.0%	80.6%	0.7%	0.0%	18.7%	0.0%	0.0%
JB Charleston	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	766.7	93.4%	0.0%	0.0%	1.1%	0.0%	5.4%	0.0%	0.0%
JB Charleston	1	13570 - Southern Coastal Plain Mesic Slope Forest	676.4	0.0%	0.0%	86.9%	0.6%	0.0%	12.6%	0.0%	0.0%
JB Charleston	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	612.4	89.4%	0.0%	0.0%	1.0%	0.0%	9.5%	0.0%	0.0%
JB Charleston	XX	11 - Open Water	480.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
JB Charleston	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	428.5	0.0%	99.9%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
JB Charleston	4	15010 - Central Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest	253.2	0.0%	80.1%	0.0%	0.9%	0.0%	19.0%	0.0%	0.0%
JB Charleston	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	250.3	0.0%	0.0%	96.4%	0.7%	0.0%	2.9%	0.0%	0.0%
JB Charleston	1	13460 - Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland	202.3	0.0%	93.6%	0.0%	0.3%	0.0%	6.0%	0.0%	0.0%
JB Charleston	1	13350 - Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	113.8	0.0%	0.0%	66.2%	2.0%	0.0%	31.8%	0.0%	0.0%
JB Charleston	1	13820 - Southern Atlantic Coastal Plain Maritime Forest	47.1	0.0%	97.4%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%
JB Charleston	XX	31 - Barren-Rock/Sand/Clay	2.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
JB Charleston	3	13610 - Central Atlantic Coastal Plain Maritime Forest	1.3	0.0%	0.0%	15.6%	0.0%	0.0%	84.4%	0.0%	0.0%
JB Charleston Total		**-**	**22,178.2**	**5.7%**	**10.0%**	**47.4%**	**0.9%**	**0.0%**	**33.9%**	**0.0%**	**2.2%**
JB Elmendorf-Richardson	5	16790 - Alaska Sub-boreal White Spruce-Hardwood Forest	29,415.5	0.0%	89.9%	0.0%	0.3%	0.0%	9.8%	0.0%	0.0%
JB Elmendorf-Richardson	4	16042 - Western North American Boreal Mesic Black Spruce Forest - Alaska Sub-boreal	16,021.9	73.3%	0.0%	0.0%	0.7%	0.0%	26.1%	0.0%	0.0%
JB Elmendorf-Richardson	5	16090 - Alaska Sub-Boreal Mesic Subalpine Alder Shrubland	7,454.2	92.2%	0.0%	0.0%	1.1%	0.0%	6.6%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
JB Elmendorf-Richardson	4	16211 - Western North American Boreal Black Spruce Dwarf-tree Peatland - Boreal Complex	4,427.6	99.9%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%
JB Elmendorf-Richardson	5	16351 - Western North American Boreal Alpine Ericaceous Dwarf-Shrubland - Complex	4,186.1	99.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
JB Elmendorf-Richardson	5	16430 - Alaskan Pacific Maritime Alpine Dwarf-Shrubland	2,631.7	99.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
JB Elmendorf-Richardson	5	16181 - Western North American Boreal Herbaceous Fen - Alaska Sub-Boreal Complex	2,144.2	0.0%	83.8%	0.0%	1.1%	0.0%	15.2%	0.0%	0.0%
JB Elmendorf-Richardson	5	16212 - Western North American Boreal Black Spruce Dwarf-tree Peatland - Alaska Sub-boreal	1,988.8	63.4%	0.0%	0.0%	1.4%	0.0%	35.1%	0.0%	0.0%
JB Elmendorf-Richardson	XX	31 - Barren-Rock/Sand/Clay	1,851.9	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	4	16030 - Western North American Boreal White Spruce-Hardwood Forest	1,751.9	89.3%	0.0%	0.0%	0.9%	0.0%	9.7%	0.0%	0.0%
JB Elmendorf-Richardson	XX	16320 - Western North American Boreal Alpine Talus and Bedrock	1,140.6	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16102 - Western North American Boreal Mesic Scrub Birch-Willow Shrubland - Alaska Sub-boreal	889.8	86.8%	0.0%	0.0%	7.9%	0.0%	5.3%	0.0%	0.0%
JB Elmendorf-Richardson	XX	11 - Open Water	848.7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
JB Elmendorf-Richardson	5	16310 - Western North American Boreal Alpine Dwarf-Shrub Summit	698.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16481 - Alaskan Pacific Maritime Mountain Hemlock Forest - Northern	581.8	99.4%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
JB Elmendorf-Richardson	5	16680 - Temperate Pacific Tidal Salt and Brackish Marsh	368.7	99.5%	0.0%	0.0%	0.1%	0.0%	0.4%	0.0%	0.0%
JB Elmendorf-Richardson	5	16170 - Western North American Boreal Shrub and Herbaceous Floodplain Wetland	355.7	0.0%	0.0%	66.8%	0.8%	0.0%	32.4%	0.0%	0.0%
JB Elmendorf-Richardson	3	16041 - Western North American Boreal Mesic Black Spruce Forest - Boreal	331.5	90.3%	0.0%	0.0%	0.0%	0.0%	9.7%	0.0%	0.0%
JB Elmendorf-Richardson	5	16110 - Western North American Sub-boreal Mesic Bluejoint Meadow	281.3	96.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.0%
JB Elmendorf-Richardson	XX	17340 - North Pacific Alpine and Subalpine Bedrock and Scree	193.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	4	16300 - Western North American Boreal Wet Black Spruce-Tussock Woodland	164.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16780 - Alaska Sub-boreal Mountain Hemlock-White Spruce Forest	137.8	99.5%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%
JB Elmendorf-Richardson	5	16620 - Temperate Pacific Freshwater Emergent Marsh	126.9	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16760 - Alaskan Pacific Maritime Alpine Floodplain	107.2	99.8%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
JB Elmendorf-Richardson	4	16050 - Western North American Boreal Mesic Birch-Aspen Forest	98.2	98.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16142 - Western North American Boreal Montane Floodplain Forest and Shrubland - Alaska Sub-	75.6	0.0%	97.1%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%
JB Elmendorf-Richardson	5	16450 - Alaska Sub-boreal and Maritime Alpine Mesic Herbaceous Meadow	71.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16080 - Alaska Sub-boreal Avalanche Slope Shrubland	59.7	0.0%	0.0%	99.6%	0.0%	0.0%	0.4%	0.0%	0.0%
JB Elmendorf-Richardson	XX	12 - Perennial Ice/Snow	56.4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
JB Elmendorf-Richardson	4	16011 - Western North American Boreal Treeline White Spruce Woodland - Boreal	44.2	67.8%	0.0%	0.0%	4.0%	0.0%	28.2%	0.0%	0.0%
JB Elmendorf-Richardson	5	16372 - Western North American Boreal Alpine Floodplain - Higher Elevations	34.9	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16141 - Western North American Boreal Montane Floodplain Forest and Shrubland - Boreal	25.1	0.0%	93.9%	0.0%	0.0%	0.0%	6.1%	0.0%	0.0%
JB Elmendorf-Richardson	5	16460 - Alaskan Pacific Maritime Western Hemlock Forest	21.4	0.0%	81.0%	0.0%	0.0%	0.0%	19.0%	0.0%	0.0%
JB Elmendorf-Richardson	4	16280 - Western North American Boreal Low Shrub-Tussock Tundra	13.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	4	16101 - Western North American Boreal Mesic Scrub Birch-Willow Shrubland - Boreal	1.4	98.8%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	0.0%
JB Elmendorf-Richardson	5	16012 - Western North American Boreal Treeline White Spruce Woodland - Alaska Sub-boreal	1.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	4	16290 - Western North American Boreal Tussock Tundra	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16482 - Alaskan Pacific Maritime Mountain Hemlock Forest - Southeast	0.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16590 - Alaskan Pacific Maritime Mountain Hemlock Peatland	0.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	3	16120 - Western North American Boreal Dry Grassland	0.4	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16600 - Alaskan Pacific Maritime Wet Low Shrub	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
JB Elmendorf-Richardson	5	16990 - Alaska Arctic Mesic Herbaceous Meadow	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson	3	16160 - Western North American Boreal Riparian Stringer Forest and Shrubland	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Elmendorf-Richardson Total		**-**	**78,606.1**	**46.3%**	**36.1%**	**0.4%**	**0.6%**	**4.1%**	**11.4%**	**0.1%**	**1.1%**
JB Langley-Eustis	1	13790 - Northern Atlantic Coastal Plain Maritime Forest	3,513.2	0.0%	0.0%	26.2%	0.9%	0.0%	72.9%	0.0%	0.0%
JB Langley-Eustis	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	2,528.6	0.0%	0.0%	40.1%	2.1%	0.0%	57.7%	0.0%	0.0%
JB Langley-Eustis	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	2,145.4	0.0%	0.0%	70.7%	3.0%	0.0%	26.3%	0.0%	0.0%
JB Langley-Eustis	1	13240 - Northern Atlantic Coastal Plain Hardwood Forest	1,625.9	0.0%	0.0%	65.0%	3.6%	0.0%	31.4%	0.0%	0.0%
JB Langley-Eustis	XX	11 - Open Water	1,137.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
JB Langley-Eustis	1	14360 - Northern Atlantic Coastal Plain Dune and Swale	334.7	0.0%	0.0%	96.8%	0.3%	0.0%	3.0%	0.0%	0.0%
JB Langley-Eustis	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	315.1	0.0%	56.8%	0.0%	0.4%	0.0%	42.8%	0.0%	0.0%
JB Langley-Eustis	4	15010 - Central Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest	307.2	0.0%	88.5%	0.0%	1.2%	0.0%	10.3%	0.0%	0.0%
JB Langley-Eustis	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	147.2	78.8%	0.0%	0.0%	0.9%	0.0%	20.2%	0.0%	0.0%
JB Langley-Eustis	1	13350 - Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	113.6	0.0%	0.0%	58.7%	4.7%	0.0%	36.6%	0.0%	0.0%
JB Langley-Eustis	2	14000 - Central Appalachian Alkaline Glade and Woodland	48.9	0.0%	0.0%	63.6%	5.5%	0.0%	30.9%	0.0%	0.0%
JB Langley-Eustis	1	14520 - Atlantic Coastal Plain Peatland Pocosin and Canebrake	31.1	0.0%	98.6%	0.0%	0.7%	0.0%	0.7%	0.0%	0.0%
JB Langley-Eustis	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	5.7	0.0%	0.0%	60.4%	3.9%	0.0%	35.7%	0.0%	0.0%
JB Langley-Eustis	1	13550 - Northern Atlantic Coastal Plain Pitch Pine Barrens	0.9	0.0%	75.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%
JB Langley-Eustis	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	0.7	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB Langley-Eustis Total		**-**	**12,255.8**	**0.9%**	**3.9%**	**40.3%**	**1.8%**	**0.0%**	**43.7%**	**0.0%**	**9.3%**

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
JB MDL	1	13550 - Northern Atlantic Coastal Plain Pitch Pine Barrens	27,253.8	0.0%	73.0%	0.0%	1.2%	0.0%	25.8%	0.0%	0.0%
JB MDL	1	13240 - Northern Atlantic Coastal Plain Hardwood Forest	5,642.4	0.0%	0.0%	58.4%	2.0%	0.0%	39.6%	0.0%	0.0%
JB MDL	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	5,387.1	95.5%	0.0%	0.0%	0.4%	0.0%	4.1%	0.0%	0.0%
JB MDL	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	2,912.0	0.0%	0.0%	9.3%	1.3%	0.0%	89.5%	0.0%	0.0%
JB MDL	XX	11 - Open Water	386.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
JB MDL	1	13030 - Northeastern Interior Dry-Mesic Oak Forest	231.5	0.0%	0.0%	17.4%	0.9%	0.0%	81.7%	0.0%	0.0%
JB MDL	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	207.6	0.0%	0.0%	85.9%	1.0%	0.0%	13.1%	0.0%	0.0%
JB MDL	1	13690 - Central Appalachian Dry Oak-Pine Forest	61.0	0.0%	0.0%	21.5%	3.3%	0.0%	75.2%	0.0%	0.0%
JB MDL	3	13770 - Central Appalachian Pine-Oak Rocky Woodland	26.0	0.0%	35.9%	0.0%	5.1%	0.0%	59.0%	0.0%	0.0%
JB MDL	3	14710 - Central Interior and Appalachian Floodplain Systems	24.5	0.0%	0.0%	97.9%	0.0%	0.0%	2.1%	0.0%	0.0%
JB MDL	1	14360 - Northern Atlantic Coastal Plain Dune and Swale	24.2	0.0%	0.0%	9.2%	0.0%	0.0%	90.8%	0.0%	0.0%
JB MDL	1	13680 - Southern Piedmont Dry Oak(-Pine) Forest	9.1	0.0%	0.0%	29.3%	22.0%	0.0%	48.8%	0.0%	0.0%
JB MDL	2	14000 - Central Appalachian Alkaline Glade and Woodland	6.7	0.0%	0.0%	26.7%	23.3%	0.0%	50.0%	0.0%	0.0%
JB MDL	5	13700 - Appalachian (Hemlock-)Northern Hardwood Forest	6.1	0.0%	0.0%	77.8%	7.3%	0.0%	14.9%	0.0%	0.0%
JB MDL	3	14720 - Central Interior and Appalachian Riparian Systems	3.8	0.0%	88.2%	0.0%	0.0%	0.0%	11.8%	0.0%	0.0%
JB MDL	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	0.2	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
JB MDL Total		-	**42,182.9**	**12.2%**	**47.2%**	**9.1%**	**1.2%**	**0.0%**	**29.4%**	**0.0%**	**0.9%**
JB San Antonio	1	13830 - Edwards Plateau Limestone Savanna and Woodland	17,037.6	0.0%	87.2%	0.0%	0.6%	0.0%	12.3%	0.0%	0.0%
JB San Antonio	2	14220 - Southern Blackland Tallgrass Prairie	11,971.3	0.0%	0.0%	21.9%	1.6%	0.0%	76.5%	0.0%	0.0%
JB San Antonio	1	15230 - Edwards Plateau Dry-Mesic Slope Forest and Woodland	9,830.5	0.0%	93.6%	0.0%	0.0%	0.0%	6.4%	0.0%	0.0%
JB San Antonio	1	11320 - Central Mixedgrass Prairie	4,047.8	0.0%	11.1%	0.0%	9.9%	0.0%	78.9%	0.0%	0.0%
JB San Antonio	1	14710 - Central Interior and Appalachian Floodplain Systems	896.5	65.5%	0.0%	0.0%	4.6%	0.0%	29.9%	0.0%	0.0%
JB San Antonio	1	11620 - Western Great Plains Floodplain Systems	682.0	0.0%	83.9%	0.0%	0.8%	0.0%	15.3%	0.0%	0.0%
JB San Antonio	1	13930 - Edwards Plateau Limestone Shrubland	538.8	0.0%	0.0%	78.0%	0.2%	0.1%	21.7%	0.0%	0.0%
JB San Antonio	1	15250 - Edwards Plateau Riparian	486.8	88.1%	0.0%	0.0%	1.2%	0.0%	10.7%	0.0%	0.0%
JB San Antonio	1	14720 - Central Interior and Appalachian Riparian Systems	411.6	64.1%	0.0%	0.0%	4.6%	0.0%	31.3%	0.0%	0.0%
JB San Antonio	XX	11 - Open Water	166.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
JB San Antonio	3	15240 - Edwards Plateau Mesic Canyon	27.8	0.0%	0.0%	93.6%	0.0%	0.0%	6.4%	0.0%	0.0%
JB San Antonio	1	11110 - Western Great Plains Mesquite Woodland and Shrubland	15.3	0.0%	53.4%	0.0%	0.0%	14.6%	32.0%	0.0%	0.0%
JB San Antonio	XX	31 - Barren-Rock/Sand/Clay	4.5	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
JB San Antonio	XX	13920 - Tamaulipan Calcareous Thornscrub	3.6	6.1%	0.0%	0.0%	0.0%	0.0%	93.9%	0.0%	0.0%
JB San Antonio Total		-	**46,120.3**	**2.8%**	**54.4%**	**6.6%**	**1.7%**	**0.0%**	**34.2%**	**0.0%**	**0.4%**
Keesler AFB	1	13800 - East Gulf Coastal Plain Maritime Forest	1,313.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Keesler AFB	1	14850 - East Gulf Coastal Plain Savanna and Wet Prairie	251.2	0.0%	2.7%	0.0%	0.1%	0.0%	97.2%	0.0%	0.0%
Keesler AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	49.5	22.7%	0.0%	0.0%	0.0%	0.0%	77.3%	0.0%	0.0%
Keesler AFB	XX	11 - Open Water	16.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Keesler AFB	1	14540 - East Gulf Coastal Plain Near-Coast Pine Flatwoods	9.1	0.0%	8.0%	0.0%	0.0%	0.0%	92.0%	0.0%	0.0%
Keesler AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	7.5	98.5%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%
Keesler AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	5.1	0.0%	0.0%	10.9%	0.0%	0.0%	89.1%	0.0%	0.0%
Keesler AFB Total		-	**1,652.3**	**1.1%**	**0.5%**	**0.0%**	**0.0%**	**0.0%**	**97.4%**	**0.0%**	**1.0%**
Kirtland AFB	5	11330 - Chihuahuan Sandy Plains Semi-Desert Grassland	15,737.8	0.0%	0.0%	84.8%	0.1%	0.4%	14.7%	0.0%	0.0%
Kirtland AFB	3	10590 - Southern Rocky Mountain Pinyon-Juniper Woodland	8,019.0	99.5%	0.1%	0.0%	0.0%	0.1%	0.3%	0.0%	0.0%
Kirtland AFB	1	10541 - Southern Rocky Mountain Ponderosa Pine Woodland-South	6,118.6	0.0%	0.0%	99.5%	0.0%	0.0%	0.5%	0.0%	0.0%
Kirtland AFB	2	11490 - Western Great Plains Shortgrass Prairie	4,609.3	98.3%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%
Kirtland AFB	5	11002 - Chihuahuan Mixed Desert and Thorn Scrub-Shrubland	3,385.0	88.9%	0.0%	0.0%	0.0%	0.3%	10.8%	0.0%	0.0%
Kirtland AFB	4	11220 - Chihuahuan Gypsophilous Grassland and Steppe	3,041.9	0.0%	94.5%	0.0%	0.0%	0.5%	5.0%	0.0%	0.0%
Kirtland AFB	2	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	2,150.2	0.0%	0.0%	96.0%	0.0%	0.2%	3.8%	0.0%	0.0%
Kirtland AFB	3	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	293.8	84.5%	0.0%	0.0%	0.0%	10.0%	5.5%	0.0%	0.0%
Kirtland AFB	2	10940 - Western Great Plains Sandhill Steppe	1,451.9	0.0%	99.6%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%
Kirtland AFB	4	10804 - Inter-Mountain Basins Big Sagebrush Shrubland-Upland	941.6	0.0%	62.0%	0.0%	0.0%	0.1%	37.9%	0.0%	0.0%
Kirtland AFB	4	10803 - Inter-Mountain Basins Big Sagebrush Shrubland-Semi-Desert	933.5	7.7%	0.0%	0.0%	0.0%	0.0%	92.2%	0.0%	0.0%
Kirtland AFB	5	11550 - North American Warm Desert Riparian Systems	552.0	83.7%	0.0%	0.0%	0.0%	0.0%	16.3%	0.0%	0.0%
Kirtland AFB	1	11190 - Southern Rocky Mountain Juniper Woodland and Savanna	429.1	0.0%	0.0%	87.1%	0.0%	0.7%	12.2%	0.0%	0.0%
Kirtland AFB	2	11470 - Western Great Plains Foothill and Piedmont Grassland	406.6	96.5%	0.0%	0.0%	0.0%	0.0%	3.5%	0.0%	0.0%
Kirtland AFB	3	11590 - Rocky Mountain Montane Riparian Systems	393.8	71.5%	26.3%	0.0%	0.1%	0.0%	2.1%	0.0%	0.0%
Kirtland AFB	1	11620 - Western Great Plains Floodplain Systems	337.1	0.0%	93.9%	0.0%	0.0%	0.0%	6.1%	0.0%	0.0%
Kirtland AFB	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	336.9	0.0%	0.0%	95.7%	0.0%	0.0%	4.3%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Kirtland AFB	XX	11003 - Chihuahuan Mixed Desert and Thorn Scrub-Steppe	319.4	97.0%	0.0%	0.0%	0.1%	0.2%	2.7%	0.0%	0.0%
Kirtland AFB	4	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	148.8	0.0%	0.0%	99.9%	0.0%	0.0%	0.1%	0.0%	0.0%
Kirtland AFB	1	10510 - Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland	121.8	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB	XX	31 - Barren-Rock/Sand/Clay	103.4	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Kirtland AFB	3	10640 - Colorado Plateau Mixed Low Sagebrush Shrubland	99.7	0.0%	94.0%	0.0%	0.0%	0.0%	6.0%	0.0%	0.0%
Kirtland AFB	2	15030 - Chihuahuan Loamy Plains Desert Grassland	90.9	0.0%	0.0%	81.6%	0.0%	0.0%	18.4%	0.0%	0.0%
Kirtland AFB	4	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	55.5	0.0%	0.0%	96.8%	0.0%	0.0%	3.2%	0.0%	0.0%
Kirtland AFB	2	11350 - Inter-Mountain Basins Semi-Desert Grassland	19.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Kirtland AFB	3	10160 - Colorado Plateau Pinyon-Juniper Woodland	13.3	0.0%	36.7%	0.0%	0.0%	1.7%	61.7%	0.0%	0.0%
Kirtland AFB	3	10520 - Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	13.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB	2	11460 - Southern Rocky Mountain Montane-Subalpine Grassland	9.8	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB	4	10770 - Chihuahuan Succulent Desert Scrub	5.8	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB	1	10540 - Southern Rocky Mountain Ponderosa Pine Woodland	5.1	0.0%	0.0%	43.5%	0.0%	0.0%	56.5%	0.0%	0.0%
Kirtland AFB	1	10950 - Apacherian-Chihuahuan Mesquite Upland Scrub	2.2	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	1.3	0.0%	0.0%	0.0%	0.0%	83.3%	16.7%	0.0%	0.0%
Kirtland AFB	XX	10070 - Western Great Plains Sparsely Vegetated Systems	0.9	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Kirtland AFB	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	0.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Kirtland AFB	5	11530 - Inter-Mountain Basins Greasewood Flat	0.7	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB	3	10120 - Rocky Mountain Bigtooth Maple Ravine Woodland	0.7	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB	2	15040 - Chihuahuan-Sonoran Desert Bottomland and Swale Grassland	0.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kirtland AFB Total		**-**	**50,151.3**	**34.5%**	**11.1%**	**44.8%**	**0.0%**	**0.5%**	**9.0%**	**0.0%**	**0.0%**
Laughlin AFB	2	13900 - Tamaulipan Mixed Deciduous Thornscrub	1,569.2	0.0%	40.4%	0.0%	0.1%	0.0%	59.5%	0.0%	0.0%
Laughlin AFB	XX	13920 - Tamaulipan Calcareous Thornscrub	1,461.8	23.3%	0.0%	0.0%	0.2%	0.0%	76.5%	0.0%	0.0%
Laughlin AFB	2	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	1,085.5	0.0%	0.0%	52.9%	0.2%	0.0%	46.9%	0.0%	0.0%
Laughlin AFB	XX	11550 - North American Warm Desert Riparian Systems	172.2	74.0%	0.0%	0.0%	0.4%	0.0%	25.6%	0.0%	0.0%
Laughlin AFB	1	13930 - Edwards Plateau Limestone Shrubland	65.9	0.0%	85.2%	0.3%	0.3%	2.4%	11.8%	0.0%	0.0%
Laughlin AFB	2	15030 - Chihuahuan Loamy Plains Desert Grassland	51.4	0.0%	0.0%	87.1%	0.0%	0.0%	12.9%	0.0%	0.0%
Laughlin AFB	2	15040 - Chihuahuan-Sonoran Desert Bottomland and Swale Grassland	43.1	0.0%	0.0%	68.8%	0.0%	0.0%	31.2%	0.0%	0.0%
Laughlin AFB	2	15042 - Chihuahuan-Sonoran Desert Bottomland and Swale Grassland-Alkali Sacaton	41.0	0.0%	87.9%	0.0%	0.0%	0.9%	11.2%	0.0%	0.0%
Laughlin AFB	2	14220 - Southern Blackland Tallgrass Prairie	22.3	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Laughlin AFB	1	10950 - Apacherian-Chihuahuan Mesquite Upland Scrub	14.2	0.0%	0.0%	96.8%	0.0%	0.1%	3.1%	0.0%	0.0%
Laughlin AFB	1	11320 - Central Mixedgrass Prairie	12.8	0.0%	87.9%	0.0%	1.0%	0.0%	11.1%	0.0%	0.0%
Laughlin AFB	XX	11 - Open Water	9.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Laughlin AFB	XX	11000 - Chihuahuan Mixed Desert and Thorn Scrub	7.5	77.2%	0.0%	0.0%	0.0%	0.0%	22.8%	0.0%	0.0%
Laughlin AFB	2	11490 - Western Great Plains Shortgrass Prairie	5.1	0.0%	91.3%	0.0%	0.0%	0.0%	8.7%	0.0%	0.0%
Laughlin AFB	2	14951 - Western Great Plains Depressional Wetland Systems-Playa	3.5	74.8%	0.0%	0.0%	0.0%	0.0%	25.2%	0.0%	0.0%
Laughlin AFB	1	10240 - Madrean Lower Montane Pine-Oak Forest and Woodland	2.8	0.0%	76.2%	0.0%	0.0%	0.0%	23.8%	0.0%	0.0%
Laughlin AFB	2	10940 - Western Great Plains Sandhill Steppe	2.0	77.8%	0.0%	0.0%	0.0%	0.0%	22.2%	0.0%	0.0%
Laughlin AFB	XX	10740 - Chihuahuan Creosotebush Desert Scrub	1.0	11.1%	0.0%	0.0%	0.0%	0.0%	88.9%	0.0%	0.0%
Laughlin AFB	1	13830 - Edwards Plateau Limestone Savanna and Woodland	0.7	0.0%	33.3%	0.0%	0.0%	0.0%	66.7%	0.0%	0.0%
Laughlin AFB	1	11110 - Western Great Plains Mesquite Woodland and Shrubland	0.5	0.0%	0.0%	0.0%	97.2%	0.0%	2.8%	0.0%	0.0%
Laughlin AFB Total		**-**	**4,571.5**	**10.5%**	**16.3%**	**14.5%**	**0.2%**	**0.0%**	**58.3%**	**0.0%**	**0.2%**
Little Rock AFB	1	13670 - Ozark-Ouachita Shortleaf Pine-Oak Forest and Woodland	2,502.2	0.0%	38.0%	0.0%	8.8%	0.0%	53.2%	0.0%	0.0%
Little Rock AFB	1	13640 - Ozark-Ouachita Dry Oak Woodland	1,374.6	0.0%	0.0%	51.1%	12.2%	0.0%	36.6%	0.0%	0.0%
Little Rock AFB	1	15070 - Ozark-Ouachita Shortleaf Pine-Bluestem Woodland	1,226.5	0.0%	0.0%	48.1%	10.4%	0.0%	41.5%	0.0%	0.0%
Little Rock AFB	3	14712 - Central Interior and Appalachian Floodplain Systems-Large Floodplains	791.6	0.0%	18.1%	0.0%	2.3%	0.0%	79.6%	0.0%	0.0%
Little Rock AFB	1	13040 - Ozark-Ouachita Dry-Mesic Oak Forest	556.7	0.0%	54.7%	0.0%	6.6%	0.0%	38.7%	0.0%	0.0%
Little Rock AFB	XX	11 - Open Water	34.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Little Rock AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	29.5	0.0%	15.1%	0.0%	1.5%	0.0%	83.4%	0.0%	0.0%
Little Rock AFB	XX	31 - Barren-Rock/Sand/Clay	2.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Little Rock AFB Total		**-**	**6,517.8**	**0.0%**	**21.5%**	**19.8%**	**8.8%**	**0.0%**	**49.3%**	**0.0%**	**0.5%**
Los Angeles AFB	4	10920 - Southern California Coastal Scrub	208.6	0.0%	0.0%	0.6%	0.0%	0.0%	99.4%	0.0%	0.0%
Los Angeles AFB	1	10140 - Central and Southern California Mixed Evergreen Woodland	5.9	0.0%	69.8%	0.0%	0.0%	0.0%	30.2%	0.0%	0.0%
Los Angeles AFB	2	11290 - California Central Valley and Southern Coastal Grassland	5.7	0.0%	0.0%	23.3%	0.0%	0.0%	76.7%	0.0%	0.0%
Los Angeles AFB	4	10970 - California Mesic Chaparral	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Los Angeles AFB	3	11520 - California Montane Riparian Systems	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Los Angeles AFB	1	11120 - California Central Valley Mixed Oak Savanna	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Los Angeles AFB Total		**-**	**220.5**	**0.0%**	**1.9%**	**1.2%**	**0.0%**	**0.0%**	**96.9%**	**0.0%**	**0.0%**
Luke AFB	5	10870 - Sonora-Mojave Creosotebush-White Bursage Desert Scrub	669,419.1	97.6%	0.0%	0.0%	0.3%	1.2%	0.9%	0.0%	0.0%
Luke AFB	5	10900 - Sonoran Granite Outcrop Desert Scrub	4,433.4	0.0%	98.2%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%
Luke AFB	2	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	640.8	0.0%	0.0%	7.8%	4.4%	0.0%	87.8%	0.0%	0.0%
Luke AFB	3	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	0.1	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Luke AFB	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	393.3	0.0%	0.0%	0.0%	0.3%	0.6%	99.1%	0.0%	0.0%
Luke AFB	5	11552 - North American Warm Desert Riparian Systems-Stringers	80.5	0.0%	0.0%	71.9%	1.3%	0.0%	26.8%	0.0%	0.0%
Luke AFB	1	11550 - North American Warm Desert Riparian Systems	62.6	0.0%	0.0%	0.4%	3.9%	0.0%	95.7%	0.0%	0.0%
Luke AFB	5	11550 - North American Warm Desert Riparian Systems	0.1	58.3%	0.0%	0.0%	0.0%	0.0%	41.7%	0.0%	0.0%
Luke AFB	XX	31 - Barren-Rock/Sand/Clay	10.5	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Luke AFB	1	10540 - Southern Rocky Mountain Ponderosa Pine Woodland	9.4	0.0%	0.0%	47.2%	0.0%	0.0%	52.8%	0.0%	0.0%
Luke AFB	XX	11 - Open Water	8.4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Luke AFB	3	10250 - Madrean Pinyon-Juniper Woodland	4.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Luke AFB	4	11270 - Inter-Mountain Basins Semi-Desert Shrub-Steppe	2.7	0.0%	0.0%	0.0%	0.0%	6.4%	93.6%	0.0%	0.0%
Luke AFB	5	11090 - Sonoran Paloverde-Mixed Cacti Desert Scrub	2.7	0.0%	0.0%	0.0%	0.0%	28.1%	71.9%	0.0%	0.0%
Luke AFB	1	10230 - Madrean Encinal	2.0	0.0%	83.4%	0.0%	0.0%	0.0%	16.6%	0.0%	0.0%
Luke AFB	1	11460 - Southern Rocky Mountain Montane-Subalpine Grassland	1.1	8.0%	0.0%	0.0%	0.0%	0.0%	92.0%	0.0%	0.0%
Luke AFB	4	11080 - Sonora-Mojave Semi-Desert Chaparral	1.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Luke AFB	4	10770 - Chihuahuan Succulent Desert Scrub	0.6	0.0%	0.0%	73.9%	0.0%	0.0%	26.1%	0.0%	0.0%
Luke AFB	3	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	0.5	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Luke AFB	1	10240 - Madrean Lower Montane Pine-Oak Forest and Woodland	0.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Luke AFB	XX	10880 - Sonora-Mojave Mixed Salt Desert Scrub	0.3	0.0%	0.0%	0.4%	0.0%	0.0%	99.6%	0.0%	0.0%
Luke AFB	3	11590 - Rocky Mountain Montane Riparian Systems	0.3	0.0%	48.9%	0.0%	0.0%	0.0%	51.1%	0.0%	0.0%
Luke AFB	1	10610 - Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Luke AFB	1	10520 - Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Luke AFB	4	11040 - Mogollon Chaparral	0.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Luke AFB	5	10820 - Mojave Mid-Elevation Mixed Desert Scrub	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Luke AFB	1	11350 - Inter-Mountain Basins Semi-Desert Grassland	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Luke AFB Total		**-**	**675,074.9**	**96.8%**	**0.6%**	**0.0%**	**0.3%**	**1.2%**	**1.0%**	**0.0%**	**0.0%**
MacDill AFB	1	13360 - Southwest Florida Coastal Strand and Maritime Hammock	2,283.7	0.0%	2.3%	0.0%	0.2%	0.0%	97.5%	0.0%	0.0%
MacDill AFB	1	14530 - Central Florida Pine Flatwoods	1,605.8	0.0%	9.7%	0.0%	0.2%	0.0%	90.1%	0.0%	0.0%
MacDill AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	749.5	76.1%	0.0%	0.0%	1.3%	0.0%	22.6%	0.0%	0.0%
MacDill AFB	1	14600 - Southern Coastal Plain Nonriverine Cypress Dome	236.8	0.0%	90.1%	0.0%	1.1%	0.0%	8.8%	0.0%	0.0%
MacDill AFB	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	222.4	0.0%	0.0%	91.3%	3.3%	0.0%	5.4%	0.0%	0.0%
MacDill AFB	3	14700 - Caribbean Coastal Wetland Systems	193.8	0.0%	0.0%	99.8%	0.0%	0.0%	0.2%	0.0%	0.0%
MacDill AFB	XX	11 - Open Water	158.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
MacDill AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	146.7	81.1%	0.0%	0.0%	1.1%	0.0%	17.9%	0.0%	0.0%
MacDill AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	40.7	0.0%	0.0%	69.9%	0.5%	0.0%	29.5%	0.0%	0.0%
MacDill AFB	1	14540 - East Gulf Coastal Plain Near-Coast Pine Flatwoods	36.4	0.0%	99.4%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
MacDill AFB	2	14890 - Floridian Highlands Freshwater Marsh	21.3	0.0%	0.0%	30.2%	1.0%	0.0%	68.8%	0.0%	0.0%
MacDill AFB	2	14250 - Florida Dry Prairie	0.7	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MacDill AFB Total		**-**	**5,696.7**	**12.1%**	**8.0%**	**7.6%**	**0.5%**	**0.0%**	**69.0%**	**0.0%**	**2.8%**
Malmstrom AFB	2	11410 - Northwestern Great Plains Mixedgrass Prairie	3,047.0	0.0%	0.0%	39.8%	7.3%	0.0%	53.0%	0.0%	0.0%
Malmstrom AFB	2	10850 - Northwestern Great Plains Shrubland	115.6	21.2%	0.0%	0.0%	2.9%	0.0%	76.0%	0.0%	0.0%
Malmstrom AFB	3	11590 - Rocky Mountain Montane Riparian Systems	88.7	0.0%	0.0%	13.8%	3.7%	0.0%	82.5%	0.0%	0.0%
Malmstrom AFB	3	11620 - Western Great Plains Floodplain Systems	42.1	0.0%	0.0%	81.5%	4.9%	0.0%	13.6%	0.0%	0.0%
Malmstrom AFB	XX	11 - Open Water	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Malmstrom AFB	2	11390 - Northern Rocky Mountain Lower Montane-Foothill-Valley Grassland	0.4	37.3%	0.0%	0.0%	0.0%	0.0%	62.7%	0.0%	0.0%
Malmstrom AFB Total		**-**	**3,294.6**	**0.7%**	**0.0%**	**38.2%**	**7.0%**	**0.0%**	**54.1%**	**0.0%**	**0.0%**
March ARB	4	10920 - Southern California Coastal Scrub	2,150.5	0.0%	0.0%	37.6%	1.0%	0.2%	61.2%	0.0%	0.0%
March ARB	XX	31 - Barren-Rock/Sand/Clay	8.1	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
March ARB	XX	11 - Open Water	1.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
March ARB	3	11520 - California Montane Riparian Systems	0.7	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
March ARB Total		**-**	**2,161.0**	**0.0%**	**0.0%**	**37.4%**	**1.0%**	**0.6%**	**60.9%**	**0.0%**	**0.1%**
Maxwell AFB	1	13570 - Southern Coastal Plain Mesic Slope Forest	2,077.7	0.0%	0.0%	0.2%	2.3%	0.0%	97.5%	0.0%	0.0%
Maxwell AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	405.3	0.0%	11.1%	0.0%	12.2%	0.0%	76.6%	0.0%	0.0%
Maxwell AFB	XX	11 - Open Water	90.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Maxwell AFB	1	13300 - Southern Coastal Plain Dry Upland Hardwood Forest	41.1	0.0%	0.0%	11.2%	0.0%	0.0%	88.8%	0.0%	0.0%
Maxwell AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	3.0	8.3%	0.0%	0.0%	0.0%	0.0%	91.7%	0.0%	0.0%
Maxwell AFB	1	13490 - East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland	0.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Maxwell AFB Total		-	**2,618.1**	**0.0%**	**1.7%**	**0.4%**	**3.7%**	**0.0%**	**90.7%**	**0.0%**	**3.5%**
McConnell AFB	2	14230 - Southeastern Great Plains Tallgrass Prairie	2,129.0	18.3%	0.0%	0.0%	0.8%	0.0%	80.9%	0.0%	0.0%
McConnell AFB	2	11320 - Central Mixedgrass Prairie	559.9	2.7%	0.0%	0.0%	0.4%	0.0%	96.8%	0.0%	0.0%
McConnell AFB	XX	11 - Open Water	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
McConnell AFB	XX	31 - Barren-Rock/Sand/Clay	0.2	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
McConnell AFB Total		-	**2,690.0**	**15.0%**	**0.0%**	**0.0%**	**0.7%**	**0.0%**	**84.2%**	**0.0%**	**0.0%**
Melrose Range	2	11490 - Western Great Plains Shortgrass Prairie	64,451.5	97.4%	0.0%	0.0%	2.0%	0.1%	0.4%	0.0%	0.0%
Melrose Range	2	10940 - Western Great Plains Sandhill Steppe	909.5	0.0%	99.7%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%
Melrose Range	4	10940 - Western Great Plains Sandhill Steppe	1,231.5	0.0%	98.7%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
Melrose Range	2	11480 - Western Great Plains Sand Prairie	1,449.8	96.1%	0.0%	0.0%	0.6%	0.0%	3.3%	0.0%	0.0%
Melrose Range	1	11620 - Western Great Plains Floodplain Systems	55.6	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range	4	11620 - Western Great Plains Floodplain Systems	843.1	0.0%	97.5%	0.0%	0.9%	0.0%	1.7%	0.0%	0.0%
Melrose Range	2	11210 - Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	701.1	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range	3	11190 - Southern Rocky Mountain Juniper Woodland and Savanna	40.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range	XX	10070 - Western Great Plains Sparsely Vegetated Systems	30.6	0.0%	0.0%	0.0%	34.2%	65.8%	0.0%	0.0%	0.0%
Melrose Range	1	11110 - Western Great Plains Mesquite Woodland and Shrubland	21.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range	2	15030 - Chihuahuan Loamy Plains Desert Grassland	16.9	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range	XX	31 - Barren-Rock/Sand/Clay	11.1	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Melrose Range	1	11320 - Central Mixedgrass Prairie	1.6	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range	4	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	1.6	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range	2	14952 - Western Great Plains Depressional Wetland Systems-Saline	0.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Melrose Range Total		-	**69,764.8**	**92.0%**	**4.3%**	**1.1%**	**1.9%**	**0.2%**	**0.5%**	**0.0%**	**0.0%**
Minn St Paul ARS	1	13950 - North-Central Oak Barrens	210.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Minn St Paul ARS	1	13940 - North-Central Interior Oak Savanna	3.8	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Minn St Paul ARS	5	13140 - North-Central Interior Maple-Basswood Forest	1.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Minn St Paul ARS	1	13100 - North-Central Interior Dry-Mesic Oak Forest and Woodland	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Minn St Paul ARS Total		-	**216.0**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**100.0%**	**0.0%**	**0.0%**
Minot AFB	2	11410 - Northwestern Great Plains Mixedgrass Prairie	4,498.1	20.7%	0.0%	0.0%	12.6%	0.0%	66.7%	0.0%	0.0%
Minot AFB	XX	11 - Open Water	300.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Minot AFB	2	14950 - Western Great Plains Depressional Wetland Systems	163.1	0.0%	0.0%	63.3%	18.3%	0.0%	18.4%	0.0%	0.0%
Minot AFB	XX	31 - Barren-Rock/Sand/Clay	6.4	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Minot AFB	1	13850 - Western Great Plains Wooded Draw and Ravine	1.6	0.0%	0.0%	72.3%	13.9%	0.0%	13.8%	0.0%	0.0%
Minot AFB	2	14200 - Northern Tallgrass Prairie	0.7	0.0%	0.0%	66.7%	33.3%	0.0%	0.0%	0.0%	0.0%
Minot AFB Total		-	**4,969.9**	**18.7%**	**0.0%**	**2.1%**	**12.0%**	**0.1%**	**61.0%**	**0.0%**	**6.0%**
Moody AFB	1	13490 - East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland	4,548.1	0.0%	0.0%	45.1%	9.6%	0.0%	45.3%	0.0%	0.0%
Moody AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	3,513.5	0.0%	99.9%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Moody AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	2,818.6	98.5%	0.0%	0.0%	0.9%	0.0%	0.6%	0.0%	0.0%
Moody AFB	1	14500 - Southern Atlantic Coastal Plain Wet Pine Savanna and Flatwoods	115.2	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Moody AFB	XX	11 - Open Water	36.3	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Moody AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	31.5	0.0%	0.0%	93.7%	0.7%	0.0%	5.6%	0.0%	0.0%
Moody AFB	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	26.9	0.0%	0.0%	96.0%	0.0%	0.0%	4.0%	0.0%	0.0%
Moody AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	7.8	77.2%	0.0%	0.0%	14.2%	0.0%	8.5%	0.0%	0.0%
Moody AFB	1	14600 - Southern Coastal Plain Nonriverine Cypress Dome	6.9	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Moody AFB	1	13300 - Southern Coastal Plain Dry Upland Hardwood Forest	5.6	0.0%	0.0%	60.0%	8.0%	0.0%	32.0%	0.0%	0.0%
Moody AFB Total		-	**11,110.3**	**25.1%**	**31.6%**	**20.0%**	**4.2%**	**0.0%**	**18.8%**	**0.0%**	**0.3%**
Mountain Home AFB	4	11250 - Inter-Mountain Basins Big Sagebrush Steppe	123,880.6	0.0%	97.0%	0.0%	0.4%	0.0%	2.6%	0.0%	0.0%
Mountain Home AFB	4	11540 - Inter-Mountain Basins Montane Riparian Systems	8,447.1	0.0%	98.1%	0.0%	0.2%	0.0%	1.7%	0.0%	0.0%
Mountain Home AFB	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	535.3	0.0%	0.0%	97.0%	0.3%	0.0%	2.8%	0.0%	0.0%
Mountain Home AFB	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	64.0	0.0%	0.0%	0.0%	2.4%	91.4%	6.2%	0.0%	0.0%
Mountain Home AFB	4	10790 - Great Basin Xeric Mixed Sagebrush Shrubland	58.2	0.0%	0.0%	88.6%	0.0%	0.4%	11.0%	0.0%	0.0%
Mountain Home AFB	2	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	41.5	0.0%	98.9%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%
Mountain Home AFB	4	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	0.7	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mountain Home AFB	XX	31 - Barren-Rock/Sand/Clay	20.1	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Mountain Home AFB	3	11600 - Rocky Mountain Subalpine/Upper Montane Riparian Systems	7.8	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Mountain Home AFB	4	10804 - Inter-Mountain Basins Big Sagebrush Shrubland-Upland	6.0	0.0%	0.0%	0.0%	3.7%	96.3%	0.0%	0.0%	0.0%
Mountain Home AFB	4	10803 - Inter-Mountain Basins Big Sagebrush Shrubland-Semi-Desert	5.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Mountain Home AFB	5	11530 - Inter-Mountain Basins Greasewood Flat	5.0	86.8%	0.0%	0.0%	0.0%	0.0%	13.2%	0.0%	0.0%
Mountain Home AFB	1	10110 - Rocky Mountain Aspen Forest and Woodland	2.5	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mountain Home AFB	XX	11 - Open Water	1.7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Mountain Home AFB	4	11350 - Inter-Mountain Basins Semi-Desert Grassland	1.6	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Mountain Home AFB	4	11590 - Rocky Mountain Montane Riparian Systems	0.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mountain Home AFB Total		**-**	**133,078.3**	**0.0%**	**96.5%**	**0.4%**	**0.4%**	**0.1%**	**2.5%**	**0.0%**	**0.0%**
Nellis AFB	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	12,110.1	0.0%	0.0%	0.0%	0.0%	79.8%	20.2%	0.0%	0.0%
Nellis AFB	5	10870 - Sonora-Mojave Creosotebush-White Bursage Desert Scrub	10,768.5	80.0%	0.0%	0.0%	0.0%	0.8%	19.2%	0.0%	0.0%
Nellis AFB	XX	31 - Barren-Rock/Sand/Clay	4,314.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Nellis AFB	1	11550 - North American Warm Desert Riparian Systems	179.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Nellis AFB	5	11552 - North American Warm Desert Riparian Systems-Stringers	167.8	0.0%	0.0%	81.0%	0.0%	0.0%	19.0%	0.0%	0.0%
Nellis AFB	5	10820 - Mojave Mid-Elevation Mixed Desert Scrub	102.5	0.0%	99.6%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%
Nellis AFB	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	95.4	0.0%	34.7%	0.0%	0.0%	9.3%	56.0%	0.0%	0.0%
Nellis AFB	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	59.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Nellis AFB	3	10520 - Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	1.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nellis AFB	4	11350 - Inter-Mountain Basins Semi-Desert Grassland	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Nellis AFB	1	10540 - Southern Rocky Mountain Ponderosa Pine Woodland	0.6	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nellis AFB	XX	11 - Open Water	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Nellis AFB	3	10190 - Great Basin Pinyon-Juniper Woodland	0.2	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nellis AFB Total		**-**	**27,801.7**	**31.0%**	**0.5%**	**0.5%**	**0.0%**	**50.9%**	**17.2%**	**0.0%**	**0.0%**
Nevada Test and Training Range	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	1,083,296.1	0.0%	99.6%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
Nevada Test and Training Range	5	10820 - Mojave Mid-Elevation Mixed Desert Scrub	829,141.9	0.0%	97.8%	0.0%	0.0%	2.2%	0.1%	0.0%	0.0%
Nevada Test and Training Range	4	10790 - Great Basin Xeric Mixed Sagebrush Shrubland	216,866.6	0.3%	0.0%	99.6%	0.0%	0.1%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	10870 - Sonora-Mojave Creosotebush-White Bursage Desert Scrub	186,493.8	82.0%	0.0%	0.0%	0.0%	17.8%	0.2%	0.0%	0.0%
Nevada Test and Training Range	3	10190 - Great Basin Pinyon-Juniper Woodland	12,347.1	97.2%	0.0%	0.0%	0.0%	2.8%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	10190 - Great Basin Pinyon-Juniper Woodland	90,819.6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	91,933.5	0.0%	0.0%	0.0%	0.0%	99.5%	0.4%	0.0%	0.0%
Nevada Test and Training Range	4	10803 - Inter-Mountain Basins Big Sagebrush Shrubland-Semi-Desert	91,374.1	99.9%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Nevada Test and Training Range	XX	10040 - North American Warm Desert Sparsely Vegetated Systems	84,153.0	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	XX	31 - Barren-Rock/Sand/Clay	69,651.9	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	11552 - North American Warm Desert Riparian Systems-Stringers	53,859.5	0.0%	0.0%	94.7%	0.0%	5.2%	0.1%	0.0%	0.0%
Nevada Test and Training Range	4	10804 - Inter-Mountain Basins Big Sagebrush Shrubland-Upland	53,224.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	1	11550 - North American Warm Desert Riparian Systems	27,018.4	0.0%	0.0%	87.1%	0.0%	12.7%	0.2%	0.0%	0.0%
Nevada Test and Training Range	4	11540 - Inter-Mountain Basins Montane Riparian Systems	11,039.3	0.0%	98.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	11540 - Inter-Mountain Basins Montane Riparian Systems	12,074.0	0.0%	98.6%	0.0%	0.0%	0.2%	1.2%	0.0%	0.0%
Nevada Test and Training Range	4	11350 - Inter-Mountain Basins Semi-Desert Grassland	20,664.3	99.6%	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%
Nevada Test and Training Range	4	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	6,033.4	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	4	10800 - Inter-Mountain Basins Big Sagebrush Shrubland	3,874.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	11530 - Inter-Mountain Basins Greasewood Flat	2,612.7	97.3%	0.0%	0.0%	0.0%	2.5%	0.2%	0.0%	0.0%
Nevada Test and Training Range	4	11030 - Great Basin Semi-Desert Chaparral	1,948.6	99.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Nevada Test and Training Range	4	11250 - Inter-Mountain Basins Big Sagebrush Steppe	1,291.1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	1	10110 - Rocky Mountain Aspen Forest and Woodland	214.0	0.0%	0.0%	99.8%	0.0%	0.0%	0.2%	0.0%	0.0%
Nevada Test and Training Range	3	10620 - Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	199.5	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	11590 - Rocky Mountain Montane Riparian Systems	66.1	99.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	XX	11 - Open Water	49.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Nevada Test and Training Range	1	10520 - Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland	39.4	0.0%	97.7%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%
Nevada Test and Training Range	3	10200 - Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland	29.4	0.0%	98.5%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%
Nevada Test and Training Range	XX	10060 - Rocky Mountain Alpine/Montane Sparsely Vegetated Systems	23.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	11270 - Inter-Mountain Basins Semi-Desert Shrub-Steppe	23.8	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	XX	10880 - Sonora-Mojave Mixed Salt Desert Scrub	16.9	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	1	10540 - Southern Rocky Mountain Ponderosa Pine Woodland	7.6	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range	5	11090 - Sonoran Paloverde-Mixed Cacti Desert Scrub	0.2	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada Test and Training Range Total		**-**	**2,950,387.1**	**12.8%**	**66.7%**	**10.1%**	**0.0%**	**10.4%**	**0.1%**	**0.0%**	**0.0%**
New Boston SFS	1	13690 - Central Appalachian Dry Oak-Pine Forest	1,711.1	0.0%	0.0%	98.1%	0.3%	0.0%	1.6%	0.0%	0.0%
New Boston SFS	3	13620 - Laurentian-Acadian Northern Pine(-Oak) Forest	608.5	0.0%	0.0%	89.8%	2.1%	0.0%	8.1%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
New Boston SFS	5	13700 - Appalachian (Hemlock-)Northern Hardwood Forest	359.5	0.0%	0.0%	94.5%	0.7%	0.0%	4.8%	0.0%	0.0%
New Boston SFS	5	14790 - Central Interior and Appalachian Swamp Systems	83.3	0.0%	92.8%	0.0%	4.0%	0.0%	3.2%	0.0%	0.0%
New Boston SFS	5	15260 - Laurentian-Acadian Swamp Systems	37.6	0.0%	99.4%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
New Boston SFS	XX	11 - Open Water	30.7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
New Boston SFS	3	13770 - Central Appalachian Pine-Oak Rocky Woodland	29.4	0.0%	83.3%	0.0%	15.2%	0.0%	1.5%	0.0%	0.0%
New Boston SFS	3	13660 - Laurentian-Acadian Pine-Hemlock-Hardwood Forest	11.1	0.0%	98.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%
New Boston SFS	5	14940 - Laurentian-Acadian Shrub-Herbaceous Wetland Systems	9.3	0.0%	0.0%	66.7%	26.2%	0.0%	7.1%	0.0%	0.0%
New Boston SFS	3	14710 - Central Interior and Appalachian Floodplain Systems	4.7	0.0%	0.0%	95.2%	0.0%	0.0%	4.8%	0.0%	0.0%
New Boston SFS	3	14750 - Laurentian-Acadian Floodplain Systems	1.6	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
New Boston SFS Total		-	**2,886.7**	**0.0%**	**5.3%**	**89.2%**	**1.1%**	**0.0%**	**3.4%**	**0.0%**	**1.1%**
Offutt AFB	2	14210 - Central Tallgrass Prairie	2,426.4	0.0%	3.3%	0.0%	16.8%	0.0%	79.9%	0.0%	0.0%
Offutt AFB	3	14690 - Eastern Great Plains Floodplain Systems	671.9	0.0%	0.0%	5.8%	21.1%	0.0%	73.1%	0.0%	0.0%
Offutt AFB	XX	11 - Open Water	118.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Offutt AFB	1	11480 - Western Great Plains Sand Prairie	30.1	31.9%	0.0%	0.0%	9.6%	0.0%	58.5%	0.0%	0.0%
Offutt AFB	2	14880 - Eastern Great Plains Wet Meadow-Prairie-Marsh	8.3	0.0%	17.3%	0.0%	6.2%	0.0%	76.6%	0.0%	0.0%
Offutt AFB	1	13100 - North-Central Interior Dry-Mesic Oak Forest and Woodland	6.5	0.7%	0.0%	0.0%	12.4%	0.0%	87.0%	0.0%	0.0%
Offutt AFB	2	11320 - Central Mixedgrass Prairie	3.7	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Offutt AFB Total		-	**3,265.4**	**0.3%**	**2.5%**	**1.2%**	**17.0%**	**0.0%**	**75.4%**	**0.0%**	**3.6%**
Patrick SFB	1	14530 - Central Florida Pine Flatwoods	1,538.7	0.0%	18.5%	0.0%	1.9%	0.0%	79.5%	0.0%	0.0%
Patrick SFB	2	13870 - Florida Peninsula Inland Scrub	464.8	0.0%	0.0%	3.2%	2.8%	0.0%	94.0%	0.0%	0.0%
Patrick SFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	190.2	61.8%	0.0%	0.0%	9.8%	0.0%	28.4%	0.0%	0.0%
Patrick SFB	1	13370 - Southeast Florida Coastal Strand and Maritime Hammock	140.1	0.0%	1.1%	0.0%	0.0%	0.0%	98.9%	0.0%	0.0%
Patrick SFB	1	13560 - Florida Longleaf Pine Sandhill	107.8	0.0%	1.0%	0.0%	0.4%	0.0%	98.6%	0.0%	0.0%
Patrick SFB	XX	11 - Open Water	61.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Patrick SFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	44.6	63.0%	0.0%	0.0%	0.0%	0.0%	37.0%	0.0%	0.0%
Patrick SFB	2	14890 - Floridian Highlands Freshwater Marsh	33.7	0.0%	0.0%	72.4%	0.0%	0.0%	27.6%	0.0%	0.0%
Patrick SFB	2	14250 - Florida Dry Prairie	28.7	0.0%	89.3%	0.0%	0.8%	0.0%	10.0%	0.0%	0.0%
Patrick SFB	1	14600 - Southern Coastal Plain Nonriverine Cypress Dome	24.3	0.0%	58.8%	0.0%	11.9%	0.0%	29.3%	0.0%	0.0%
Patrick SFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	6.3	0.0%	0.0%	49.0%	0.0%	0.0%	51.0%	0.0%	0.0%
Patrick SFB	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	2.0	0.0%	0.0%	90.3%	0.0%	0.0%	9.7%	0.0%	0.0%
Patrick SFB	XX	31 - Barren-Rock/Sand/Clay	1.0	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Patrick SFB	1	13360 - Southwest Florida Coastal Strand and Maritime Hammock	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Patrick SFB Total		-	**2,643.6**	**5.5%**	**12.4%**	**1.7%**	**2.5%**	**0.0%**	**75.6%**	**0.0%**	**2.3%**
Peterson AFB	2	11470 - Western Great Plains Foothill and Piedmont Grassland	1,534.3	32.5%	0.0%	0.0%	0.0%	0.2%	67.3%	0.0%	0.0%
Peterson AFB	1	11320 - Central Mixedgrass Prairie	176.5	0.0%	64.2%	0.0%	10.3%	0.0%	25.5%	0.0%	0.0%
Peterson AFB	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	98.6	0.0%	0.0%	4.7%	93.7%	0.0%	1.7%	0.0%	0.0%
Peterson AFB	4	10920 - Southern California Coastal Scrub	61.4	0.0%	0.0%	82.5%	0.0%	0.0%	17.5%	0.0%	0.0%
Peterson AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	53.0	0.0%	9.8%	0.0%	80.0%	0.0%	10.2%	0.0%	0.0%
Peterson AFB	4	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	48.5	0.0%	0.0%	14.2%	0.9%	0.0%	84.9%	0.0%	0.0%
Peterson AFB	1	14580 - West Gulf Coastal Plain Pine-Hardwood Flatwoods	28.5	0.0%	0.0%	5.0%	81.9%	0.0%	13.1%	0.0%	0.0%
Peterson AFB	5	10870 - Sonora-Mojave Creosotebush-White Bursage Desert Scrub	25.1	69.1%	0.0%	0.0%	5.8%	7.6%	17.6%	0.0%	0.0%
Peterson AFB	4	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	12.5	0.0%	0.0%	0.0%	0.0%	41.1%	58.9%	0.0%	0.0%
Peterson AFB	3	11590 - Rocky Mountain Montane Riparian Systems	11.2	18.6%	0.0%	0.0%	0.0%	0.0%	81.4%	0.0%	0.0%
Peterson AFB	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	9.7	0.0%	0.0%	20.6%	0.0%	0.0%	79.4%	0.0%	0.0%
Peterson AFB	XX	31 - Barren-Rock/Sand/Clay	9.5	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Peterson AFB	2	11490 - Western Great Plains Shortgrass Prairie	5.4	85.8%	0.0%	0.0%	0.0%	3.9%	10.3%	0.0%	0.0%
Peterson AFB	2	10940 - Western Great Plains Sandhill Steppe	5.4	0.0%	70.9%	0.0%	0.0%	0.0%	29.1%	0.0%	0.0%
Peterson AFB	1	11110 - Western Great Plains Mesquite Woodland and Shrubland	3.9	0.0%	64.6%	0.0%	0.0%	0.0%	35.4%	0.0%	0.0%
Peterson AFB	1	13080 - Crosstimbers Oak Forest and Woodland	2.5	0.0%	54.5%	0.0%	0.0%	0.0%	45.5%	0.0%	0.0%
Peterson AFB	XX	11 - Open Water	2.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Peterson AFB	1	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	0.9	0.0%	0.0%	0.0%	97.1%	0.0%	2.9%	0.0%	0.0%
Peterson AFB	1	10542 - Southern Rocky Mountain Ponderosa Pine Woodland-North	0.7	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Peterson AFB	5	11530 - Inter-Mountain Basins Greasewood Flat	0.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Peterson AFB	1	13930 - Edwards Plateau Limestone Shrubland	0.4	0.0%	0.0%	22.3%	0.0%	58.4%	19.2%	0.0%	0.0%
Peterson AFB	1	10541 - Southern Rocky Mountain Ponderosa Pine Woodland-South	0.3	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Peterson AFB	1	11190 - Southern Rocky Mountain Juniper Woodland and Savanna	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Peterson AFB	1	11180 - Southern California Oak Woodland and Savanna	0.1	0.0%	48.7%	0.0%	0.0%	0.0%	51.3%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Peterson AFB Total		-	2,090.8	25.0%	6.1%	3.2%	8.6%	1.0%	56.2%	0.0%	0.1%
Pillar Point AFS	4	11050 - Northern and Central California Dry-Mesic Chaparral	23.2	0.0%	0.0%	62.4%	0.0%	1.9%	35.7%	0.0%	0.0%
Pillar Point AFS	4	11280 - Northern California Coastal Scrub	19.1	0.0%	66.0%	0.0%	0.0%	1.9%	32.0%	0.0%	0.0%
Pillar Point AFS	2	11310 - California Northern Coastal Grassland	6.2	0.0%	72.9%	0.0%	0.0%	0.0%	27.1%	0.0%	0.0%
Pillar Point AFS	3	11520 - California Montane Riparian Systems	5.2	0.0%	68.3%	0.0%	0.0%	0.0%	31.7%	0.0%	0.0%
Pillar Point AFS	XX	31 - Barren-Rock/Sand/Clay	3.5	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Pillar Point AFS	4	10920 - Southern California Coastal Scrub	3.0	0.0%	0.0%	20.2%	0.0%	7.3%	72.5%	0.0%	0.0%
Pillar Point AFS	4	11770 - California Coastal Closed-Cone Conifer Forest and Woodland	1.8	0.0%	50.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%
Pillar Point AFS	1	10140 - Central and Southern California Mixed Evergreen Woodland	0.8	0.0%	81.8%	0.0%	0.0%	18.2%	0.0%	0.0%	0.0%
Pillar Point AFS	4	11100 - Southern California Dry-Mesic Chaparral	0.3	0.0%	0.0%	46.4%	0.0%	0.0%	53.6%	0.0%	0.0%
Pillar Point AFS	2	11630 - Pacific Coastal Marsh Systems	0.2	0.0%	0.0%	0.7%	0.0%	0.0%	99.3%	0.0%	0.0%
Pillar Point AFS	XX	11 - Open Water	0.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Pillar Point AFS	4	10970 - California Mesic Chaparral	0.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pillar Point AFS Total		-	63.4	0.0%	35.1%	24.0%	0.0%	7.3%	33.4%	0.0%	0.1%
Pittsburg ARS	1	13030 - Northeastern Interior Dry-Mesic Oak Forest	91.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Pittsburg ARS	3	13210 - South-Central Interior Mesophytic Forest	22.3	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Pittsburg ARS	1	13170 - Allegheny-Cumberland Dry Oak Forest and Woodland	19.5	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Pittsburg ARS	3	14720 - Central Interior and Appalachian Riparian Systems	3.7	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Pittsburg ARS Total		-	136.9	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Poinsett ECR	1	13460 - Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland	6,055.4	0.0%	86.1%	0.0%	10.4%	0.0%	3.5%	0.0%	0.0%
Poinsett ECR	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	1,844.3	0.0%	0.0%	98.9%	0.1%	0.0%	0.9%	0.0%	0.0%
Poinsett ECR	1	14680 - Atlantic Coastal Plain Streamhead Seepage Swamp-Pocosin-Baygall	1,706.6	0.0%	0.0%	98.1%	0.9%	0.0%	0.9%	0.0%	0.0%
Poinsett ECR	1	14490 - Central Atlantic Coastal Plain Wet Longleaf Pine Savanna and Flatwoods	1,333.2	0.0%	0.0%	97.3%	2.0%	0.0%	0.7%	0.0%	0.0%
Poinsett ECR	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	844.7	0.0%	0.0%	94.0%	3.5%	0.0%	2.4%	0.0%	0.0%
Poinsett ECR	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	696.0	0.0%	0.0%	99.4%	0.1%	0.0%	0.5%	0.0%	0.0%
Poinsett ECR	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	43.8	0.0%	99.9%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Poinsett ECR	XX	11 - Open Water	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Poinsett ECR	4	15010 - Central Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest	0.9	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Poinsett ECR	1	13350 - Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	0.2	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Poinsett ECR Total		-	12,525.9	0.0%	42.0%	50.2%	5.6%	0.0%	2.2%	0.0%	0.0%
Robins AFB	1	13460 - Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland	3,550.6	0.0%	11.5%	0.0%	4.1%	0.0%	84.5%	0.0%	0.0%
Robins AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	1,847.9	0.0%	99.2%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%
Robins AFB	1	13570 - Southern Coastal Plain Mesic Slope Forest	752.8	0.0%	0.0%	22.3%	2.2%	0.0%	75.4%	0.0%	0.0%
Robins AFB	1	13350 - Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	266.8	0.0%	0.0%	19.5%	2.0%	0.0%	78.5%	0.0%	0.0%
Robins AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	125.4	96.6%	0.0%	0.0%	0.0%	0.0%	3.4%	0.0%	0.0%
Robins AFB	1	14680 - Atlantic Coastal Plain Streamhead Seepage Swamp-Pocosin-Baygall	81.6	0.0%	0.0%	98.1%	0.0%	0.0%	1.9%	0.0%	0.0%
Robins AFB	XX	11 - Open Water	41.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Robins AFB	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	17.3	0.0%	0.0%	15.9%	3.8%	0.0%	80.3%	0.0%	0.0%
Robins AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	5.5	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Robins AFB	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	5.0	0.0%	0.0%	91.2%	0.0%	0.0%	8.8%	0.0%	0.0%
Robins AFB	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	4.5	0.0%	0.0%	80.0%	0.0%	0.0%	20.0%	0.0%	0.0%
Robins AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	1.3	50.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%
Robins AFB Total		-	6,699.8	1.8%	33.4%	4.7%	2.5%	0.0%	56.9%	0.0%	0.6%
Schriever SFB	2	11470 - Western Great Plains Foothill and Piedmont Grassland	3,615.8	86.7%	0.0%	0.0%	0.1%	0.2%	13.0%	0.0%	0.0%
Schriever SFB	4	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	59.4	0.0%	0.0%	50.6%	0.0%	0.7%	48.7%	0.0%	0.0%
Schriever SFB	4	10860 - Rocky Mountain Lower Montane-Foothill Shrubland	55.3	0.0%	0.0%	0.0%	0.0%	85.5%	14.5%	0.0%	0.0%
Schriever SFB	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	31.5	0.0%	0.0%	81.0%	0.0%	0.7%	18.3%	0.0%	0.0%
Schriever SFB	XX	31 - Barren-Rock/Sand/Clay	26.9	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Schriever SFB	2	11490 - Western Great Plains Shortgrass Prairie	23.1	28.8%	0.0%	0.0%	0.0%	51.0%	20.2%	0.0%	0.0%
Schriever SFB	2	10940 - Western Great Plains Sandhill Steppe	12.2	0.0%	83.6%	0.0%	0.0%	1.8%	14.5%	0.0%	0.0%
Schriever SFB	3	11590 - Rocky Mountain Montane Riparian Systems	2.4	27.3%	0.0%	0.0%	0.0%	0.0%	72.7%	0.0%	0.0%
Schriever SFB	1	10541 - Southern Rocky Mountain Ponderosa Pine Woodland-South	0.2	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Schriever SFB Total		-	3,826.9	82.1%	0.3%	1.5%	0.1%	2.4%	13.6%	0.0%	0.0%
Scott AFB	2	14210 - Central Tallgrass Prairie	2,132.2	0.0%	0.0%	1.1%	1.6%	0.0%	97.3%	0.0%	0.0%
Scott AFB	5	13140 - North-Central Interior Maple-Basswood Forest	368.8	0.0%	0.0%	73.7%	3.2%	0.0%	23.1%	0.0%	0.0%
Scott AFB	1	13100 - North-Central Interior Dry-Mesic Oak Forest and Woodland	268.5	9.5%	0.0%	0.0%	13.6%	0.0%	76.9%	0.0%	0.0%
Scott AFB	3	14710 - Central Interior and Appalachian Floodplain Systems	86.3	0.0%	71.9%	0.0%	0.0%	0.0%	28.1%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Scott AFB	1	13110 - North-Central Interior Dry Oak Forest and Woodland	65.1	0.0%	95.2%	0.0%	0.3%	0.0%	4.4%	0.0%	0.0%
Scott AFB	XX	11 - Open Water	15.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Scott AFB Total		-	**2,936.8**	**0.9%**	**4.2%**	**10.0%**	**2.8%**	**0.0%**	**81.5%**	**0.0%**	**0.5%**
Seymour Johnson AFB	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	2,544.1	0.0%	0.0%	5.3%	2.5%	0.0%	92.2%	0.0%	0.0%
Seymour Johnson AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	483.6	0.0%	47.4%	0.0%	3.2%	0.0%	49.4%	0.0%	0.0%
Seymour Johnson AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	91.3	0.0%	0.0%	44.0%	9.7%	0.0%	46.2%	0.0%	0.0%
Seymour Johnson AFB	1	14490 - Central Atlantic Coastal Plain Wet Longleaf Pine Savanna and Flatwoods	54.0	0.0%	0.0%	32.0%	3.7%	0.0%	64.3%	0.0%	0.0%
Seymour Johnson AFB	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	51.4	0.0%	0.0%	32.8%	6.1%	0.0%	61.1%	0.0%	0.0%
Seymour Johnson AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	36.9	12.6%	0.0%	0.0%	1.5%	0.0%	85.9%	0.0%	0.0%
Seymour Johnson AFB	1	13460 - Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland	6.4	0.0%	58.6%	0.0%	10.3%	0.0%	31.0%	0.0%	0.0%
Seymour Johnson AFB	XX	11 - Open Water	5.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Seymour Johnson AFB	1	13350 - Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	4.0	0.0%	0.0%	27.8%	0.0%	0.0%	72.2%	0.0%	0.0%
Seymour Johnson AFB	3	13610 - Central Atlantic Coastal Plain Maritime Forest	0.4	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Seymour Johnson AFB Total		-	**3,277.3**	**0.1%**	**7.1%**	**6.4%**	**2.8%**	**0.0%**	**83.3%**	**0.0%**	**0.2%**
Shaw AFB	1	13470 - Atlantic Coastal Plain Upland Longleaf Pine Woodland	2,541.7	0.0%	0.0%	6.5%	8.9%	0.0%	84.6%	0.0%	0.0%
Shaw AFB	1	13460 - Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland	635.8	0.0%	10.2%	0.0%	3.2%	0.0%	86.6%	0.0%	0.0%
Shaw AFB	1	13350 - Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest	121.2	0.0%	0.0%	3.2%	7.2%	0.0%	89.6%	0.0%	0.0%
Shaw AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	115.0	0.0%	0.0%	65.9%	12.3%	0.0%	21.8%	0.0%	0.0%
Shaw AFB	3	13430 - Atlantic Coastal Plain Mesic Hardwood Forest	89.2	0.0%	0.0%	31.4%	25.4%	0.0%	43.2%	0.0%	0.0%
Shaw AFB	1	14490 - Central Atlantic Coastal Plain Wet Longleaf Pine Savanna and Flatwoods	34.9	0.0%	0.0%	17.8%	18.1%	0.0%	64.0%	0.0%	0.0%
Shaw AFB	1	13680 - Southern Piedmont Dry Oak(-Pine) Forest	19.7	0.0%	0.0%	40.4%	1.1%	0.0%	58.4%	0.0%	0.0%
Shaw AFB	XX	11 - Open Water	15.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Shaw AFB	3	13160 - Southern Piedmont Mesic Forest	3.0	0.0%	0.0%	70.2%	0.0%	0.0%	29.8%	0.0%	0.0%
Shaw AFB	3	14730 - Gulf and Atlantic Coastal Plain Floodplain Systems	0.5	0.0%	11.5%	0.0%	0.0%	0.0%	88.5%	0.0%	0.0%
Shaw AFB	3	14720 - Central Interior and Appalachian Riparian Systems	0.2	0.0%	4.1%	0.0%	0.0%	0.0%	95.9%	0.0%	0.0%
Shaw AFB	3	14710 - Central Interior and Appalachian Floodplain Systems	0.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Shaw AFB Total		-	**3,576.8**	**0.0%**	**1.8%**	**8.1%**	**8.4%**	**0.0%**	**81.3%**	**0.0%**	**0.4%**
Sheppard AFB	1	11320 - Central Mixedgrass Prairie	4,202.9	0.0%	23.4%	0.0%	2.2%	0.0%	74.4%	0.0%	0.0%
Sheppard AFB	1	11620 - Western Great Plains Floodplain Systems	262.8	0.0%	25.5%	0.0%	0.0%	0.0%	74.5%	0.0%	0.0%
Sheppard AFB	1	11110 - Western Great Plains Mesquite Woodland and Shrubland	147.6	0.0%	45.9%	0.0%	10.1%	0.0%	43.9%	0.0%	0.0%
Sheppard AFB Total		-	**4,613.3**	**0.0%**	**24.3%**	**0.0%**	**2.3%**	**0.0%**	**73.4%**	**0.0%**	**0.0%**
Tinker AFB	2	14230 - Southeastern Great Plains Tallgrass Prairie	4,572.2	0.0%	5.7%	0.0%	0.4%	0.0%	94.0%	0.0%	0.0%
Tinker AFB	1	13080 - Crosstimbers Oak Forest and Woodland	347.8	0.0%	49.9%	0.0%	0.1%	0.0%	50.0%	0.0%	0.0%
Tinker AFB	2	11480 - Western Great Plains Sand Prairie	61.9	48.9%	0.0%	0.0%	0.0%	0.0%	51.1%	0.0%	0.0%
Tinker AFB	XX	11 - Open Water	9.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Tinker AFB	XX	31 - Barren-Rock/Sand/Clay	1.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Tinker AFB Total		-	**4,993.4**	**0.6%**	**8.7%**	**0.0%**	**0.3%**	**0.0%**	**90.2%**	**0.0%**	**0.2%**
Travis AFB	2	11290 - California Central Valley and Southern Coastal Grassland	4,271.9	0.0%	0.0%	43.9%	0.1%	0.1%	55.9%	0.0%	0.0%
Travis AFB	1	11140 - California Lower Montane Blue Oak-Foothill Pine Woodland and Savanna	464.9	0.0%	0.7%	0.0%	0.0%	0.0%	99.3%	0.0%	0.0%
Travis AFB	XX	11510 - California Central Valley Riparian Woodland and Shrubland	223.1	0.0%	0.0%	24.4%	0.0%	0.0%	75.6%	0.0%	0.0%
Travis AFB	1	11120 - California Central Valley Mixed Oak Savanna	26.8	0.0%	0.0%	94.2%	0.0%	0.0%	5.8%	0.0%	0.0%
Travis AFB	XX	31 - Barren-Rock/Sand/Clay	7.1	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Travis AFB	4	10970 - California Mesic Chaparral	6.2	0.0%	0.0%	10.7%	0.0%	0.0%	89.3%	0.0%	0.0%
Travis AFB	XX	10020 - Mediterranean California Sparsely Vegetated Systems	3.1	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Travis AFB	2	11630 - Pacific Coastal Marsh Systems	3.0	0.0%	0.0%	92.6%	0.0%	0.0%	7.4%	0.0%	0.0%
Travis AFB	4	11050 - Northern and Central California Dry-Mesic Chaparral	2.1	0.0%	0.0%	20.8%	0.0%	16.8%	62.4%	0.0%	0.0%
Travis AFB	1	10430 - Mediterranean California Mixed Evergreen Forest	0.4	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Travis AFB Total		-	**5,008.8**	**0.0%**	**0.1%**	**39.1%**	**0.1%**	**0.2%**	**60.5%**	**0.0%**	**0.0%**
Tyndall AFB	1	14540 - East Gulf Coastal Plain Near-Coast Pine Flatwoods	20,718.7	0.0%	77.0%	0.0%	0.4%	0.0%	22.6%	0.0%	0.0%
Tyndall AFB	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	2,546.7	78.1%	0.0%	0.0%	0.8%	0.0%	21.1%	0.0%	0.0%
Tyndall AFB	2	14890 - Floridian Highlands Freshwater Marsh	1,812.1	0.0%	0.0%	32.2%	0.5%	0.0%	67.3%	0.0%	0.0%
Tyndall AFB	3	14610 - Southern Coastal Plain Seepage Swamp and Baygall	1,088.3	0.0%	0.0%	95.0%	0.1%	0.0%	4.9%	0.0%	0.0%
Tyndall AFB	XX	31 - Barren-Rock/Sand/Clay	503.7	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Tyndall AFB	XX	11 - Open Water	481.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Tyndall AFB	1	14600 - Southern Coastal Plain Nonriverine Cypress Dome	348.3	0.0%	82.4%	0.0%	0.1%	0.0%	17.6%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Tyndall AFB	1	14850 - East Gulf Coastal Plain Savanna and Wet Prairie	231.8	0.0%	99.2%	0.0%	0.1%	0.0%	0.7%	0.0%	0.0%
Tyndall AFB	1	14680 - Atlantic Coastal Plain Streamhead Seepage Swamp-Pocosin-Baygall	160.5	0.0%	0.0%	82.9%	0.1%	0.0%	16.9%	0.0%	0.0%
Tyndall AFB	1	13800 - East Gulf Coastal Plain Maritime Forest	33.1	0.0%	22.4%	0.0%	0.0%	0.0%	77.6%	0.0%	0.0%
Tyndall AFB	1	13490 - East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland	15.5	0.0%	0.0%	92.8%	0.0%	0.0%	7.2%	0.0%	0.0%
Tyndall AFB	2	14900 - Gulf and Atlantic Coastal Plain Tidal Marsh Systems	2.3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tyndall AFB	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	1.0	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tyndall AFB Total		-	**27,943.5**	**7.1%**	**59.0%**	**6.3%**	**0.4%**	**1.8%**	**23.6%**	**0.0%**	**1.7%**
Utah Test Training Range	XX	31 - Barren-Rock/Sand/Clay	789,725.1	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Utah Test Training Range	5	10810 - Inter-Mountain Basins Mixed Salt Desert Scrub	95,084.7	0.0%	98.2%	0.0%	0.3%	0.9%	0.6%	0.0%	0.0%
Utah Test Training Range	5	11530 - Inter-Mountain Basins Greasewood Flat	26,638.9	93.9%	0.0%	0.0%	0.1%	4.8%	1.2%	0.0%	0.0%
Utah Test Training Range	XX	11 - Open Water	24,254.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Utah Test Training Range	4	10790 - Great Basin Xeric Mixed Sagebrush Shrubland	16,120.7	0.0%	0.0%	97.5%	0.2%	2.2%	0.0%	0.0%	0.0%
Utah Test Training Range	XX	10010 - Inter-Mountain Basins Sparsely Vegetated Systems	3,280.9	0.0%	0.0%	0.0%	0.0%	94.9%	5.1%	0.0%	0.0%
Utah Test Training Range	4	10804 - Inter-Mountain Basins Big Sagebrush Shrubland-Upland	1,810.0	0.0%	99.5%	0.0%	0.3%	0.0%	0.1%	0.0%	0.0%
Utah Test Training Range	4	11260 - Inter-Mountain Basins Montane Sagebrush Steppe	596.5	0.0%	0.0%	99.5%	0.1%	0.4%	0.0%	0.0%	0.0%
Utah Test Training Range	4	10803 - Inter-Mountain Basins Big Sagebrush Shrubland-Semi-Desert	473.3	97.1%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%
Utah Test Training Range	5	11540 - Inter-Mountain Basins Montane Riparian Systems	395.6	0.0%	85.8%	0.0%	8.0%	0.8%	5.4%	0.0%	0.0%
Utah Test Training Range	3	10640 - Colorado Plateau Mixed Low Sagebrush Shrubland	272.9	0.0%	0.0%	0.0%	0.0%	0.5%	99.5%	0.0%	0.0%
Utah Test Training Range	3	11070 - Rocky Mountain Gambel Oak-Mixed Montane Shrubland	224.9	0.0%	0.3%	0.0%	0.0%	0.8%	98.9%	0.0%	0.0%
Utah Test Training Range	5	10190 - Great Basin Pinyon-Juniper Woodland	127.0	99.5%	0.0%	0.0%	0.2%	0.0%	0.4%	0.0%	0.0%
Utah Test Training Range	4	11350 - Inter-Mountain Basins Semi-Desert Grassland	12.0	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Utah Test Training Range	4	11040 - Mogollon Chaparral	9.3	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Utah Test Training Range Total		-	**959,026.4**	**2.7%**	**10.0%**	**1.7%**	**0.0%**	**82.9%**	**0.2%**	**0.0%**	**2.5%**
Vance AFB	2	14230 - Southeastern Great Plains Tallgrass Prairie	2,148.6	0.0%	26.0%	0.0%	2.1%	0.0%	72.0%	0.0%	0.0%
Vance AFB	2	11480 - Western Great Plains Sand Prairie	700.8	14.1%	0.0%	0.0%	2.6%	0.0%	83.3%	0.0%	0.0%
Vance AFB	1	11620 - Western Great Plains Floodplain Systems	201.6	0.0%	89.5%	0.0%	3.0%	0.0%	7.6%	0.0%	0.0%
Vance AFB	1	13080 - Crosstimbers Oak Forest and Woodland	127.3	0.0%	87.2%	0.0%	4.0%	0.0%	8.8%	0.0%	0.0%
Vance AFB	1	11320 - Central Mixedgrass Prairie	9.5	0.0%	79.0%	0.0%	1.2%	0.0%	19.9%	0.0%	0.0%
Vance AFB Total		-	**3,187.8**	**3.1%**	**26.9%**	**0.0%**	**2.3%**	**0.0%**	**67.7%**	**0.0%**	**0.0%**
Vandenberg AFB	4	10920 - Southern California Coastal Scrub	48,713.0	0.0%	0.0%	85.2%	1.0%	1.3%	12.6%	0.0%	0.0%
Vandenberg AFB	4	11100 - Southern California Dry-Mesic Chaparral	16,922.4	0.0%	0.0%	67.5%	0.7%	0.7%	31.0%	0.0%	0.0%
Vandenberg AFB	1	11180 - Southern California Oak Woodland and Savanna	8,230.8	0.0%	94.9%	0.0%	0.4%	0.2%	4.5%	0.0%	0.0%
Vandenberg AFB	1	10140 - Central and Southern California Mixed Evergreen Woodland	7,897.8	0.0%	94.2%	0.0%	0.0%	0.0%	5.8%	0.0%	0.0%
Vandenberg AFB	3	11520 - California Montane Riparian Systems	6,200.6	0.0%	85.5%	0.0%	3.0%	0.1%	11.4%	0.0%	0.0%
Vandenberg AFB	1	11130 - California Coastal Live Oak Woodland and Savanna	5,956.3	0.0%	93.9%	0.0%	0.4%	0.0%	5.7%	0.0%	0.0%
Vandenberg AFB	XX	31 - Barren-Rock/Sand/Clay	1,987.8	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Vandenberg AFB	2	11290 - California Central Valley and Southern Coastal Grassland	1,937.1	0.0%	0.0%	94.2%	0.0%	0.0%	5.8%	0.0%	0.0%
Vandenberg AFB	4	10970 - California Mesic Chaparral	873.9	0.0%	0.0%	90.9%	3.1%	0.1%	5.9%	0.0%	0.0%
Vandenberg AFB	XX	11 - Open Water	286.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Vandenberg AFB	3	10980 - California Montane Woodland and Chaparral	279.5	0.0%	93.0%	0.0%	0.0%	0.0%	7.0%	0.0%	0.0%
Vandenberg AFB	1	10270 - Mediterranean California Dry-Mesic Mixed Conifer Forest and Woodland	83.4	0.0%	93.3%	0.0%	0.0%	0.0%	6.7%	0.0%	0.0%
Vandenberg AFB	2	11630 - Pacific Coastal Marsh Systems	75.6	0.0%	0.0%	95.3%	0.0%	0.0%	4.7%	0.0%	0.0%
Vandenberg AFB	4	11770 - California Coastal Closed-Cone Conifer Forest and Woodland	72.8	0.0%	72.4%	0.0%	0.0%	9.1%	18.5%	0.0%	0.0%
Vandenberg AFB	1	11120 - California Central Valley Mixed Oak Savanna	2.2	0.0%	0.0%	80.0%	0.0%	0.0%	20.0%	0.0%	0.0%
Vandenberg AFB	4	11050 - Northern and Central California Dry-Mesic Chaparral	1.8	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%

Installation	FRG	Biophysical Setting Code and Name	Acres	VCC I (Low)	VCC II (Moderate)	VCC III (High)	Agriculture	Barren or Sparse	Developed	Snow / Ice	Water
Vandenberg AFB	1	11140 - California Lower Montane Blue Oak-Foothill Pine Woodland and Savanna	0.4	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Vandenberg AFB	4	11080 - Sonora-Mojave Semi-Desert Chaparral	0.3	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Vandenberg AFB	2	11310 - California Northern Coastal Grassland	0.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Vandenberg AFB Total		-	**99,522.1**	**0.0%**	**26.7%**	**55.9%**	**0.9%**	**2.8%**	**13.5%**	**0.0%**	**0.3%**
Warren Grove Range	1	13550 - Northern Atlantic Coastal Plain Pitch Pine Barrens	8,894.6	0.0%	89.7%	0.0%	0.7%	0.0%	9.5%	0.0%	0.0%
Warren Grove Range	5	14800 - Gulf and Atlantic Coastal Plain Swamp Systems	530.9	96.9%	0.0%	0.0%	0.3%	0.0%	2.8%	0.0%	0.0%
Warren Grove Range	1	13240 - Northern Atlantic Coastal Plain Hardwood Forest	4.2	0.0%	0.0%	94.7%	0.0%	0.0%	5.3%	0.0%	0.0%
Warren Grove Range	3	14740 - Gulf and Atlantic Coastal Plain Small Stream Riparian Systems	1.4	0.0%	0.0%	94.7%	0.0%	0.0%	5.3%	0.0%	0.0%
Warren Grove Range	XX	11 - Open Water	0.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Warren Grove Range	1	13690 - Central Appalachian Dry Oak-Pine Forest	0.4	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Warren Grove Range Total		-	**9,432.5**	**5.5%**	**84.6%**	**0.1%**	**0.7%**	**0.0%**	**9.2%**	**0.0%**	**0.0%**
Westover ARB	1	13690 - Central Appalachian Dry Oak-Pine Forest	1,496.5	0.0%	0.0%	5.8%	4.6%	0.0%	89.7%	0.0%	0.0%
Westover ARB	5	15180 - North-Central Interior Wet Flatwoods	481.7	0.0%	0.0%	6.2%	1.3%	0.0%	92.4%	0.0%	0.0%
Westover ARB	5	14790 - Central Interior and Appalachian Swamp Systems	293.9	0.0%	44.9%	0.0%	6.9%	0.0%	48.2%	0.0%	0.0%
Westover ARB	3	14710 - Central Interior and Appalachian Floodplain Systems	72.4	0.0%	0.0%	41.1%	7.1%	0.0%	51.8%	0.0%	0.0%
Westover ARB	5	13700 - Appalachian (Hemlock-)Northern Hardwood Forest	28.7	0.0%	0.0%	54.4%	6.9%	0.0%	38.8%	0.0%	0.0%
Westover ARB	5	14940 - Laurentian-Acadian Shrub-Herbaceous Wetland Systems	13.5	0.0%	0.0%	44.1%	49.4%	0.0%	6.4%	0.0%	0.0%
Westover ARB	3	13770 - Central Appalachian Pine-Oak Rocky Woodland	0.3	0.0%	76.7%	0.0%	0.0%	0.0%	23.3%	0.0%	0.0%
Westover ARB	3	14720 - Central Interior and Appalachian Riparian Systems	0.2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Westover ARB Total		-	**2,387.2**	**0.0%**	**5.5%**	**7.0%**	**4.6%**	**0.0%**	**82.9%**	**0.0%**	**0.0%**
Whiteman AFB	2	14230 - Southeastern Great Plains Tallgrass Prairie	3,968.1	0.0%	5.7%	0.0%	24.1%	0.0%	70.2%	0.0%	0.0%
Whiteman AFB	1	13940 - North-Central Interior Oak Savanna	943.0	0.0%	0.0%	21.8%	20.2%	0.0%	58.0%	0.0%	0.0%
Whiteman AFB	3	14712 - Central Interior and Appalachian Floodplain Systems-Large Floodplains	122.6	0.0%	16.7%	0.0%	3.7%	0.0%	79.6%	0.0%	0.0%
Whiteman AFB	1	13640 - Ozark-Ouachita Dry Oak Woodland	117.2	0.0%	0.0%	39.2%	16.9%	0.0%	44.0%	0.0%	0.0%
Whiteman AFB	1	13040 - Ozark-Ouachita Dry-Mesic Oak Forest	79.4	0.0%	39.9%	0.0%	9.5%	0.0%	50.6%	0.0%	0.0%
Whiteman AFB	XX	11 - Open Water	11.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Whiteman AFB	1	13340 - Ozark-Ouachita Mesic Hardwood Forest	11.3	31.4%	0.0%	0.0%	0.0%	0.0%	68.6%	0.0%	0.0%
Whiteman AFB Total		-	**5,253.5**	**0.1%**	**5.3%**	**4.8%**	**22.4%**	**0.0%**	**67.2%**	**0.0%**	**0.2%**
Wright-Patterson AFB	1	13100 - North-Central Interior Dry-Mesic Oak Forest and Woodland	4,023.9	3.4%	0.0%	0.0%	2.8%	0.0%	93.8%	0.0%	0.0%
Wright-Patterson AFB	5	13130 - North-Central Interior Beech-Maple Forest	1,023.3	0.0%	0.0%	5.9%	0.4%	0.0%	93.7%	0.0%	0.0%
Wright-Patterson AFB	1	13110 - North-Central Interior Dry Oak Forest and Woodland	943.2	0.0%	4.8%	0.0%	2.2%	0.0%	93.1%	0.0%	0.0%
Wright-Patterson AFB	3	14710 - Central Interior and Appalachian Floodplain Systems	796.4	0.0%	36.5%	0.0%	3.3%	0.0%	60.1%	0.0%	0.0%
Wright-Patterson AFB	2	14210 - Central Tallgrass Prairie	672.9	0.0%	0.0%	2.8%	0.7%	0.0%	96.5%	0.0%	0.0%
Wright-Patterson AFB	XX	11 - Open Water	113.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Wright-Patterson AFB	2	14930 - Central Interior and Appalachian Shrub-Herbaceous Wetland Systems	53.7	0.0%	0.0%	43.2%	0.4%	0.0%	56.4%	0.0%	0.0%
Wright-Patterson AFB	5	15180 - North-Central Interior Wet Flatwoods	1.6	0.0%	0.0%	30.5%	0.0%	0.0%	69.5%	0.0%	0.0%
Wright-Patterson AFB Total		-	**7,628.2**	**1.8%**	**4.4%**	**1.3%**	**2.2%**	**0.0%**	**88.8%**	**0.0%**	**1.5%**
Youngstown ARS	1	13030 - Northeastern Interior Dry-Mesic Oak Forest	256.5	0.0%	7.5%	0.0%	0.4%	0.0%	92.1%	0.0%	0.0%
Youngstown ARS	5	13130 - North-Central Interior Beech-Maple Forest	59.3	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Youngstown ARS	2	14930 - Central Interior and Appalachian Shrub-Herbaceous Wetland Systems	3.1	0.0%	0.0%	31.6%	0.0%	0.0%	68.4%	0.0%	0.0%
Youngstown ARS Total		-	**318.9**	**0.0%**	**6.1%**	**0.3%**	**0.3%**	**0.0%**	**93.3%**	**0.0%**	**0.0%**
Grand Total CONUS			**7,637,530.2**	**20.4%**	**42.7%**	**8.4%**	**0.4%**	**23.8%**	**3.8%**	**0.0%**	**0.5%**
Grand Total Alaska			**109,901.6**	**53.6%**	**27.9%**	**0.6%**	**0.4%**	**3.3%**	**12.4%**	**0.1%**	**1.8%**
Grand Total			**7,747,431.8**	**37%**	**35%**	**5%**	**0%**	**14%**	**8%**	**0%**	**1%**

Source: LANDFIRE, 2016 and DAF, 2023

Table E-4 Acreage of Department of the Air Force-Managed Lands by Current National Vegetation Classification and Installation

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Air Force Academy	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G219	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest & Woodland	541.4	2.8%
Air Force Academy	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G221	Rocky Mountain Subalpine-Montane Limber Pine-Bristlecone Pine Woodland	1.8	0.0%
Air Force Academy	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G222	Rocky Mountain Subalpine-Montane Aspen Forest & Woodland	87.4	0.5%
Air Force Academy	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G225	Rocky Mountain Douglas-fir-White Fir-Blue Spruce Mesic Forest	1.1	0.0%
Air Force Academy	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G226	Southern Rocky Mountain White Fir-Douglas-fir Dry Forest	230.5	1.2%
Air Force Academy	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G228	Southern Rocky Mountain Ponderosa Pine Forest & Woodland	6,885.1	35.5%
Air Force Academy	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G229	Southern Rocky Mountain Ponderosa Pine Savanna	87.5	0.5%
Air Force Academy	2.B.2.Na Western North American Grassland & Shrubland	G268	Southern Rocky Mountain Montane-Subalpine Grassland	1,094.2	5.6%
Air Force Academy	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	17.2	0.1%
Air Force Academy	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	669.3	3.5%
Air Force Academy	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	1,181.1	6.1%
Air Force Academy	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	1,204.9	6.2%
Air Force Academy	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	767.3	4.0%
Air Force Academy	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	1,470.7	7.6%
Air Force Academy	2.B.2.Nb Great Plains Grassland & Shrubland	G068	Great plains Sand Grassland	8.9	0.0%
Air Force Academy	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	2.2	0.0%
Air Force Academy	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	7.1	0.0%
Air Force Academy	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	569.3	2.9%
Air Force Academy	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	1,396.2	7.2%
Air Force Academy	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	0.2	0.0%
Air Force Academy	Developed - Combined High, Medium, Low, and Roads			1,408.8	7.3%
Air Force Academy	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	183.5	0.9%
Air Force Academy	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	29.9	0.2%
Air Force Academy	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G526	Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland	94.2	0.5%
Air Force Academy	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G527	Western Montane-Subalpine Riparian & Seep Shrubland	138.0	0.7%
Air Force Academy	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	38.8	0.2%
Air Force Academy	1.B.3.Nc Rocky Mountain & Great Basin Montane Flooded & Swamp Forest	G506	Rocky Mountain & Great Basin Montane Riparian Forest	469.0	2.4%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	14.9	0.1%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	18.5	0.1%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	15.6	0.1%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	90.8	0.5%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	44.1	0.2%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	20.5	0.1%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	5.3	0.0%
Air Force Academy	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	158.3	0.8%
Air Force Academy	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	95.3	0.5%
Air Force Academy	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G250	Colorado Plateau Pinyon-Juniper Woodland	58.2	0.3%
Air Force Academy	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G252	Southern Rocky Mountain Juniper Woodland & Savanna	0.7	0.0%
Air Force Academy	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G253	Southern Rocky Mountain Pinyon-Juniper Woodland	27.7	0.1%
Air Force Academy	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	66.9	0.3%
Air Force Academy	Open Water	11.A	Open Water	52.0	0.3%
Air Force Academy	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	48.6	0.3%
Air Force Academy	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G565	Rocky Mountain Cliff Scree & Rock Vegetation	32.2	0.2%
Air Force Academy	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	23.2	0.1%
Air Force Academy	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	19.8	0.1%
Air Force Academy	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	3.6	0.0%
Air Force Academy	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	3.3	0.0%
Air Force Academy	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	2.4	0.0%
Air Force Academy	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	0.2	0.0%
Air Force Academy	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	0.9	0.0%
Air Force Academy	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.4	0.0%
Air Force Academy	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	0.2	0.0%
Air Force Academy	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G200	Madrean Pinyon-Juniper Woodland	0.2	0.0%
Air Force Academy Total				**19,389.5**	**100.0%**
Altus AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	347.9	6.9%
Altus AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	1.1	0.0%
Altus AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G192	Southern Plains Scrub Woodland & Shrubland	423.6	8.4%
Altus AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G334	Southern Great Plains Tallgrass Prairie	2.2	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Altus AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	1,137.6	22.5%
Altus AFB	Developed - Combined High, Medium, Low, and Roads			1,528.0	30.2%
Altus AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,049.8	20.7%
Altus AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	194.9	3.8%
Altus AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	258.2	5.1%
Altus AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	47.1	0.9%
Altus AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	34.0	0.7%
Altus AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	32.6	0.6%
Altus AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G017	Southeastern Great Plains Post Oak-Blackjack Oak Forest & Woodland	4.5	0.1%
Altus AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	1.6	0.0%
Altus AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	1.1	0.0%
Altus AFB	Open Water	11.A	Open Water	0.7	0.0%
Altus AFB Total				**5,065.1**	**100.0%**
Arnold AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G012	Shortleaf Pine-Oak Forest	107.3	0.3%
Arnold AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G020	Appalachian & Interior Mesic Forest	352.2	0.9%
Arnold AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	987.4	2.5%
Arnold AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G159	South-Central Interior Oak Forest & Woodland	16,337.2	42.0%
Arnold AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G601	Chinkapin Oak-Shumard Oak-Blue Ash Alkaline Forest	327.1	0.8%
Arnold AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G650	Northeastern Oak-Hickory Forest & Woodland	0.0	0.0%
Arnold AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	4,149.0	10.7%
Arnold AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G174	South-Central Patch Prairie	544.2	1.4%
Arnold AFB	Open Water	11.A	Open Water	3,815.8	9.8%
Arnold AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G552	Northern & Central Native Ruderal Flooded & Swamp Forest	4.8	0.0%
Arnold AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G597	North-Central Flatwoods & Swamp Forest	1,604.0	4.1%
Arnold AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	1,925.8	4.9%
Arnold AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	2,794.1	7.2%
Arnold AFB	Developed - Combined High, Medium, Low, and Roads			2,350.5	6.0%
Arnold AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,084.5	2.8%
Arnold AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	932.7	2.4%
Arnold AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	625.1	1.6%
Arnold AFB	5.B.2.Na North American Freshwater Aquatic Vegetation	G114	Eastern North American Freshwater Aquatic Vegetation	413.4	1.1%
Arnold AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	309.4	0.8%
Arnold AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	122.8	0.3%
Arnold AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G167	Northern & Central Shrub Swamp	0.5	0.0%
Arnold AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	0.6	0.0%
Arnold AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G753	Appalachian & Interior Riverscour Barrens & Prairie	92.7	0.2%
Arnold AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	47.1	0.1%
Arnold AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	2.9	0.0%
Arnold AFB	6.B.1.Na Eastern North American Temperate Cliff Scree & Rock Vegetation	G106	Eastern North American Temperate Cliff	2.2	0.0%
Arnold AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	0.1	0.0%
Arnold AFB Total				**38,933.5**	**100.0%**
Avon Park AFR	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	6.0	0.0%
Avon Park AFR	1.B.1.Na Southeastern North American Warm Temperate Forest	G596	Mesic Longleaf Pine Flatwoods-Spodosol Woodland	47,816.5	44.9%
Avon Park AFR	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	421.7	0.4%
Avon Park AFR	2.B.2.Ne Southeastern North American Grassland & Shrubland	G176	Florida Dry Prairie	17,820.3	16.7%
Avon Park AFR	2.B.2.Ne Southeastern North American Grassland & Shrubland	G177	Florida Xeric Scrub	8,397.0	7.9%
Avon Park AFR	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	2,457.9	2.3%
Avon Park AFR	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G111	Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	11,435.0	10.7%
Avon Park AFR	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G188	Coastal Plain River & Basin Freshwater Marsh	5,797.0	5.4%
Avon Park AFR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	611.7	0.6%
Avon Park AFR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	2.0	0.0%
Avon Park AFR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	149.3	0.1%
Avon Park AFR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	2,871.7	2.7%
Avon Park AFR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	424.8	0.4%
Avon Park AFR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	174.2	0.2%
Avon Park AFR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	11.3	0.0%
Avon Park AFR	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	3,429.6	3.2%
Avon Park AFR	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,525.3	1.4%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Avon Park AFR	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	194.5	0.2%
Avon Park AFR	Developed - Combined High, Medium, Low, and Roads			1,536.1	1.4%
Avon Park AFR	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	967.1	0.9%
Avon Park AFR	Open Water	11.A	Open Water	192.9	0.2%
Avon Park AFR	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	145.9	0.1%
Avon Park AFR	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	23.6	0.0%
Avon Park AFR	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	7.1	0.0%
Avon Park AFR	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.2	0.0%
Avon Park AFR Total				106,418.5	100.0%
Barksdale AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	10,791.5	23.9%
Barksdale AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G007	Southern Mesic Beech-Magnolia-Oak Forest	954.2	2.1%
Barksdale AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	7,389.8	16.3%
Barksdale AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	1,282.5	2.8%
Barksdale AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	135.5	0.3%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	5,380.9	11.9%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	2,060.1	4.6%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	363.3	0.8%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G130	Nonriverine Wet Oak Flatwoods	147.0	0.3%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	87.1	0.2%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G759	Southern Ash-Elm-Willow Floodplain Forest	655.1	1.4%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	1.1	0.0%
Barksdale AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G784	Southeastern Great Plains Floodplain Forest	300.7	0.7%
Barksdale AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G013	Western Gulf Plain Pine-Oak Forest & Woodland	7,725.1	17.1%
Barksdale AFB	Developed - Combined High, Medium, Low, and Roads			4,586.8	10.1%
Barksdale AFB	Open Water	11.A	Open Water	943.9	2.1%
Barksdale AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	510.6	1.1%
Barksdale AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	378.7	0.8%
Barksdale AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G175	Southeastern Coastal Plain Patch Prairie	83.7	0.2%
Barksdale AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	707.4	1.6%
Barksdale AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	514.4	1.1%
Barksdale AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	151.8	0.3%
Barksdale AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	25.2	0.1%
Barksdale AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	19.0	0.0%
Barksdale AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G187	Southeastern Coastal Plain Seepage Wetland	9.2	0.0%
Barksdale AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.7	0.0%
Barksdale AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G335	South-Central Plains & Coastal Prairie	0.7	0.0%
Barksdale AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	0.4	0.0%
Barksdale AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.4	0.0%
Barksdale AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.4	0.0%
Barksdale AFB Total				45,206.9	100.0%
Barry M Goldwater Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	86.1	0.0%
Barry M Goldwater Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G293	Sonoran Paloverde-Mixed Cacti Desert Scrub	672,603.8	64.7%
Barry M Goldwater Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	297,774.3	28.6%
Barry M Goldwater Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	23,326.2	2.2%
Barry M Goldwater Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	4,677.1	0.4%
Barry M Goldwater Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G675	North American Warm Semi-Desert Dunes & Sand Flats	12,198.0	1.2%
Barry M Goldwater Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	10,922.3	1.1%
Barry M Goldwater Range	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	2.9	0.0%
Barry M Goldwater Range	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	8,148.3	0.8%
Barry M Goldwater Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	2,689.2	0.3%
Barry M Goldwater Range	Developed - Combined High, Medium, Low, and Roads			1,698.4	0.2%
Barry M Goldwater Range	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,496.5	0.1%
Barry M Goldwater Range	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	17.6	0.0%
Barry M Goldwater Range	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	1,179.7	0.1%
Barry M Goldwater Range	2.C.4.Nc Southwestern North American Warm Desert Freshwater Bosque & Marsh	G533	North American Warm Desert Riparian Low Bosque & Shrubland	1,027.3	0.1%
Barry M Goldwater Range	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	456.7	0.0%
Barry M Goldwater Range	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G487	Madrean Juniper Savanna & Woodland	372.8	0.0%
Barry M Goldwater Range	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	306.4	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Barry M Goldwater Range	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	242.6	0.0%
Barry M Goldwater Range	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	24.7	0.0%
Barry M Goldwater Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	53.3	0.0%
Barry M Goldwater Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	67.8	0.0%
Barry M Goldwater Range	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	15.8	0.0%
Barry M Goldwater Range	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	8.2	0.0%
Barry M Goldwater Range	Open Water	11.A	Open Water	0.9	0.0%
Barry M Goldwater Range Total				1,039,397.0	100.0%
Beale AFB	2.B.1.Nb California Grassland & Meadow	G496	California Native Perennial Grassland	819.8	3.5%
Beale AFB	2.B.1.Nb California Grassland & Meadow	G497	California Ruderal Grassland & Forb Meadow	10,148.0	43.3%
Beale AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G517	Vancouverian Freshwater Wet Meadow & Marsh	4,606.1	19.6%
Beale AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	186.0	0.8%
Beale AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	555.7	2.4%
Beale AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	67.4	0.3%
Beale AFB	Developed - Combined High, Medium, Low, and Roads			2,321.1	9.9%
Beale AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,229.0	5.2%
Beale AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	445.0	1.9%
Beale AFB	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	1,255.6	5.4%
Beale AFB	2.B.4.Nb Pacific North American Coast Scrub & Herb Vegetation	G663	California Coastal Beach & Dune Scrub	550.5	2.3%
Beale AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G563	California Cliff Scree & Rock Vegetation	323.7	1.4%
Beale AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	323.5	1.4%
Beale AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	256.8	1.1%
Beale AFB	1.B.1.Nc Californian Warm Temperate Forest	G195	California Broadleaf Forest & Woodland	159.1	0.7%
Beale AFB	1.B.1.Nc Californian Warm Temperate Forest	G678	California Ruderal Forest	6.3	0.0%
Beale AFB	2.B.1.Na Californian Scrub	G257	California Xeric Chaparral	7.3	0.0%
Beale AFB	2.B.1.Na Californian Scrub	G802	California Ruderal Scrub	62.7	0.3%
Beale AFB	Open Water	11.A	Open Water	64.9	0.3%
Beale AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	17.9	0.1%
Beale AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G573	Southern Vancouverian Cliff Scree & Rock Vegetation	11.3	0.0%
Beale AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	6.4	0.0%
Beale AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	6.1	0.0%
Beale AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	5.3	0.0%
Beale AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	4.0	0.0%
Beale AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	2.1	0.0%
Beale AFB Total				23,441.9	100.0%
Buckley AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	0.4	0.0%
Buckley AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	125.3	3.8%
Buckley AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	790.5	24.0%
Buckley AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	144.1	4.4%
Buckley AFB	Developed - Combined High, Medium, Low, and Roads			986.8	29.9%
Buckley AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	399.0	12.1%
Buckley AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	43.7	1.3%
Buckley AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	377.6	11.4%
Buckley AFB	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	169.9	5.2%
Buckley AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	8.9	0.3%
Buckley AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	33.5	1.0%
Buckley AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	78.4	2.4%
Buckley AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	2.4	0.1%
Buckley AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	62.6	1.9%
Buckley AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	43.0	1.3%
Buckley AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	10.1	0.3%
Buckley AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G209	Rocky Mountain Foothill-Rock Outcrop Limber Pine-Juniper Woodland	8.6	0.3%
Buckley AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G252	Southern Rocky Mountain Juniper Woodland & Savanna	6.1	0.2%
Buckley AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	5.4	0.2%
Buckley AFB	Open Water	11.A	Open Water	1.1	0.0%
Buckley AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.4	0.0%
Buckley AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	0.2	0.0%
Buckley AFB Total				3,297.9	100.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Cannon AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G068	Great plains Sand Grassland	83.5	1.9%
Cannon AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	3.1	0.1%
Cannon AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	74.1	1.7%
Cannon AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	1,264.1	29.0%
Cannon AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	0.9	0.0%
Cannon AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G192	Southern Plains Scrub Woodland & Shrubland	0.7	0.0%
Cannon AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	25.3	0.6%
Cannon AFB	Developed - Combined High, Medium, Low, and Roads			1,230.9	28.2%
Cannon AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	875.1	20.1%
Cannon AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	73.1	1.7%
Cannon AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	478.6	11.0%
Cannon AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	143.2	3.3%
Cannon AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	35.1	0.8%
Cannon AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G489	Chihuahuan Semi-Desert Lowland Grassland	1.6	0.0%
Cannon AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	3.8	0.1%
Cannon AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G492	Chihuahuan Gypsophilous Grassland	26.5	0.6%
Cannon AFB	Open Water	11.A	Open Water	15.8	0.4%
Cannon AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	15.5	0.4%
Cannon AFB	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	4.2	0.1%
Cannon AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G136	Great Plains Playa & Rainwater Basin Wetland	3.6	0.1%
Cannon AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	0.2	0.0%
Cannon AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	0.7	0.0%
Cannon AFB Total				**4,359.5**	**100.0%**
Cape Canaveral SFS	1.B.1.Na Southeastern North American Warm Temperate Forest	G008	Sand Pine Scrub Forest & Open Woodland	305.8	1.9%
Cape Canaveral SFS	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	11.3	0.1%
Cape Canaveral SFS	1.B.1.Na Southeastern North American Warm Temperate Forest	G596	Mesic Longleaf Pine Flatwoods-Spodosol Woodland	2,407.1	15.0%
Cape Canaveral SFS	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	946.8	5.9%
Cape Canaveral SFS	1.A.1.Ea Caribbeo-Mesoamerican Dry Forest	G765	Caribbean Hardwood Hammock & Coastal Strand Forest	2,945.4	18.4%
Cape Canaveral SFS	Developed - Combined High, Medium, Low, and Roads			2,798.6	17.5%
Cape Canaveral SFS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	2,169.8	13.6%
Cape Canaveral SFS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	358.1	2.2%
Cape Canaveral SFS	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	1.1	0.0%
Cape Canaveral SFS	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	2.7	0.0%
Cape Canaveral SFS	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	1,874.6	11.7%
Cape Canaveral SFS	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	0.2	0.0%
Cape Canaveral SFS	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	1.3	0.0%
Cape Canaveral SFS	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	6.8	0.0%
Cape Canaveral SFS	2.B.2.Ne Southeastern North American Grassland & Shrubland	G176	Florida Dry Prairie	1.6	0.0%
Cape Canaveral SFS	2.B.2.Ne Southeastern North American Grassland & Shrubland	G177	Florida Xeric Scrub	35.7	0.2%
Cape Canaveral SFS	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	1,167.7	7.3%
Cape Canaveral SFS	Open Water	11.A	Open Water	420.8	2.6%
Cape Canaveral SFS	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	291.3	1.8%
Cape Canaveral SFS	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G188	Coastal Plain River & Basin Freshwater Marsh	107.0	0.7%
Cape Canaveral SFS	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G777	Atlantic & Gulf Coastal Interdunal Marsh & Prairie	15.0	0.1%
Cape Canaveral SFS	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G120	Atlantic & Gulf Coast Brackish Tidal Marsh	0.2	0.0%
Cape Canaveral SFS	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	42.8	0.3%
Cape Canaveral SFS	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G122	Atlantic & Gulf Coast Low Salt Marsh	0.1	0.0%
Cape Canaveral SFS	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G123	Atlantic & Gulf Coast Saline Flat & Panne	29.8	0.2%
Cape Canaveral SFS	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G661	South Atlantic & Gulf Coastal Beach	30.7	0.2%
Cape Canaveral SFS	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	11.1	0.1%
Cape Canaveral SFS	2.A.3.Ee Caribbeo-Mesoamerican Dine & Coastal Grassland & Shrubland	G127	Caribbean Coastal Beach & Dune Vegetation	10.1	0.1%
Cape Canaveral SFS	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	5.6	0.0%
Cape Canaveral SFS	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.4	0.0%
Cape Canaveral SFS Total				**15,999.4**	**100.0%**
Cape Cod AFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G161	Pitch Pine Barrens	72.9	72.7%
Cape Cod AFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	0.2	0.2%
Cape Cod AFS	Developed - Combined High, Medium, Low, and Roads			19.7	19.7%
Cape Cod AFS	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	6.6	6.6%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Cape Cod AFS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	0.4	0.4%
Cape Cod AFS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	0.4	0.4%
Cape Cod AFS Total				100.3	100.0%
Cheyenne Mountain SFS	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G219	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest & Woodland	63.1	11.7%
Cheyenne Mountain SFS	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G222	Rocky Mountain Subalpine-Montane Aspen Forest & Woodland	0.4	0.1%
Cheyenne Mountain SFS	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G225	Rocky Mountain Douglas-fir-White Fir-Blue Spruce Mesic Forest	1.2	0.2%
Cheyenne Mountain SFS	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G226	Southern Rocky Mountain White Fir-Douglas-fir Dry Forest	68.4	12.6%
Cheyenne Mountain SFS	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G228	Southern Rocky Mountain Ponderosa Pine Forest & Woodland	190.8	35.2%
Cheyenne Mountain SFS	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G229	Southern Rocky Mountain Ponderosa Pine Savanna	1.6	0.3%
Cheyenne Mountain SFS	Developed - Combined High, Medium, Low, and Roads			78.9	14.6%
Cheyenne Mountain SFS	2.B.2.Na Western North American Grassland & Shrubland	G268	Southern Rocky Mountain Montane-Subalpine Grassland	27.7	5.1%
Cheyenne Mountain SFS	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	14.7	2.7%
Cheyenne Mountain SFS	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	34.4	6.4%
Cheyenne Mountain SFS	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	1.0	0.2%
Cheyenne Mountain SFS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1.5	0.3%
Cheyenne Mountain SFS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	22.5	4.2%
Cheyenne Mountain SFS	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	5.0	0.9%
Cheyenne Mountain SFS	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G250	Colorado Plateau Pinyon-Juniper Woodland	3.1	0.6%
Cheyenne Mountain SFS	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G252	Southern Rocky Mountain Juniper Woodland & Savanna	0.0	0.0%
Cheyenne Mountain SFS	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G253	Southern Rocky Mountain Pinyon-Juniper Woodland	10.2	1.9%
Cheyenne Mountain SFS	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	0.0	0.0%
Cheyenne Mountain SFS	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	2.0	0.4%
Cheyenne Mountain SFS	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	3.9	0.7%
Cheyenne Mountain SFS	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	0.3	0.1%
Cheyenne Mountain SFS	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	0.9	0.2%
Cheyenne Mountain SFS	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	2.4	0.5%
Cheyenne Mountain SFS	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	0.7	0.1%
Cheyenne Mountain SFS	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	0.2	0.0%
Cheyenne Mountain SFS	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	0.7	0.1%
Cheyenne Mountain SFS	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	0.4	0.1%
Cheyenne Mountain SFS	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	0.2	0.0%
Cheyenne Mountain SFS	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G526	Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland	0.1	0.0%
Cheyenne Mountain SFS	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G527	Western Montane-Subalpine Riparian & Seep Shrubland	1.3	0.2%
Cheyenne Mountain SFS	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	1.5	0.3%
Cheyenne Mountain SFS	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	0.8	0.2%
Cheyenne Mountain SFS	1.B.3.Nc Rocky Mountain & Great Basin Montane Flooded & Swamp Forest	G506	Rocky Mountain & Great Basin Montane Riparian Forest	0.8	0.1%
Cheyenne Mountain SFS	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.4	0.1%
Cheyenne Mountain SFS	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	0.0	0.0%
Cheyenne Mountain SFS Total				541.2	100.0%
Clear SFS	1.B.4.Na North American Boreal Forest & Woodland Division	G579	Central Alaskan-Yukon Boreal Mesic Forest Group	9,206.6	80.2%
Clear SFS	Developed - Combined High, Medium, Low, and Roads			620.5	5.4%
Clear SFS	1.B.5.Na North American Boreal Flooded & Swamp Forest Division	G546	Alaskan-Yukon Boreal Black Spruce Wet Forest Group	519.6	4.5%
Clear SFS	1.B.5.Na North American Boreal Flooded & Swamp Forest Division	G548	Alaskan-Yukon Boreal Flooded & Rich Swamp Group	74.3	0.6%
Clear SFS	Open Water	11.A	Open Water	450.0	3.9%
Clear SFS	2.B.3.Na North American Boreal Grassland & Shrubland Division	G356	Western Boreal Mesic Birch-Willow Low Shrubland Group	140.5	1.2%
Clear SFS	2.B.3.Na North American Boreal Grassland & Shrubland Division	G357	Western Boreal Mesic Alder-Willow Shrubland Group	18.0	0.2%
Clear SFS	2.B.3.Na North American Boreal Grassland & Shrubland Division	G358	Western Boreal Mesic Grassland & Meadow Group	49.4	0.4%
Clear SFS	2.B.3.Na North American Boreal Grassland & Shrubland Division	G359	Western Boreal Dry Shrubland & Grassland Group	0.2	0.0%
Clear SFS	2.C.2.Na North American Bog & Fen	G360	Western North American Boreal Bog & Acidic Fen Group	109.9	1.0%
Clear SFS	2.C.2.Na North American Bog & Fen Division	G361	Western North American Boreal Alkaline Fen Group	0.3	0.0%
Clear SFS	2.C.4.Nb Western North American Temperate & Boreal Freshwater Marsh, Wet Meadow & Sh	G528	Western Boreal Wet Meadow & Marsh Group	53.5	0.5%
Clear SFS	2.C.4.Nb Western North American Temperate & Boreal Freshwater Marsh, Wet Meadow & Sh	G866	Western Boreal Wet Alder-Willow Tall Shrub Swamp Group	41.6	0.4%
Clear SFS	4.B.2.Xa Arctic Tundra & Barrens	G897	Arctic Low Shrub Tundra Group	84.1	0.7%
Clear SFS	6.B.1.Nc North American Boreal Cliff, Scree & Rock Vegetation Division	G822	Western Boreal Cliff, Scree & Rock Vegetation Group	66.7	0.6%
Clear SFS	4.B.1.Nb Western North American Alpine Tundra	G867	Western Boreal Alpine Mesic Dwarf Birch-Willow Shrubland Group	8.2	0.1%
Clear SFS	4.B.1.Nb Western North American Alpine Tundra Division	G613	Western Boreal Alpine Dwarf-shrubland Group	11.2	0.1%
Clear SFS	4.B.1.Nb Western North American Alpine Tundra Division	G785	Western Boreal Alpine Cliff, Scree & Rock Vegetation Group	4.5	0.0%
Clear SFS	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	11.3	0.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Clear SFS	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	10.4	0.1%
Clear SFS Total				11,480.6	100.0%
Columbus AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,671.8	31.6%
Columbus AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	264.8	5.0%
Columbus AFB	Developed - Combined High, Medium, Low, and Roads			1,690.4	31.9%
Columbus AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	365.9	6.9%
Columbus AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	402.9	7.6%
Columbus AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G130	Nonriverine Wet Oak Flatwoods	4.4	0.1%
Columbus AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	1.0	0.0%
Columbus AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	399.4	7.5%
Columbus AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	289.8	5.5%
Columbus AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	0.8	0.0%
Columbus AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	0.9	0.0%
Columbus AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	126.5	2.4%
Columbus AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	49.1	0.9%
Columbus AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	9.0	0.2%
Columbus AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	4.7	0.1%
Columbus AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	4.7	0.1%
Columbus AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	3.6	0.1%
Columbus AFB	Open Water	11.A	Open Water	3.3	0.1%
Columbus AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	0.1	0.0%
Columbus AFB Total				5,292.9	100.0%
Dare County Range	2.C.2.Nb Southeastern North American Coastal Bog & Fen	G186	Southeastern Coastal Plain Pocosin & Shrub Bog	26,326.0	56.5%
Dare County Range	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G110	Atlantic & Gulf Coastal Plain Freshwater Tidal Marsh	3,873.7	8.3%
Dare County Range	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	3,041.3	6.5%
Dare County Range	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	1,006.8	2.2%
Dare County Range	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	10,174.5	21.8%
Dare County Range	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	11.8	0.0%
Dare County Range	Open Water	11.A	Open Water	891.5	1.9%
Dare County Range	Developed - Combined High, Medium, Low, and Roads			510.5	1.1%
Dare County Range	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	165.0	0.4%
Dare County Range	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	243.0	0.5%
Dare County Range	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G120	Atlantic & Gulf Coast Brackish Tidal Marsh	33.3	0.1%
Dare County Range	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	63.2	0.1%
Dare County Range	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G123	Atlantic & Gulf Coast Saline Flat & Panne	0.5	0.0%
Dare County Range	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	79.6	0.2%
Dare County Range	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	78.5	0.2%
Dare County Range	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	61.6	0.1%
Dare County Range	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	28.7	0.1%
Dare County Range	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	26.2	0.1%
Dare County Range	7.A.1.2 Vineyard	G737	Tropical & Temperate Grape Vineyard	6.0	0.0%
Dare County Range	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	2.7	0.0%
Dare County Range	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	1.3	0.0%
Dare County Range	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.2	0.0%
Dare County Range Total				46,626.0	100.0%
Davis Monthan AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G293	Sonoran Paloverde-Mixed Cacti Desert Scrub	3,994.3	37.9%
Davis Monthan AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	169.1	1.6%
Davis Monthan AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	12.9	0.1%
Davis Monthan AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	244.8	2.3%
Davis Monthan AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	8.9	0.1%
Davis Monthan AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G675	North American Warm Semi-Desert Dunes & Sand Flats	0.7	0.0%
Davis Monthan AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	110.5	1.0%
Davis Monthan AFB	Developed - Combined High, Medium, Low, and Roads			3,775.8	35.8%
Davis Monthan AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,901.6	18.0%
Davis Monthan AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	258.7	2.5%
Davis Monthan AFB	2.C.4.Nc Southwestern North American Warm Desert Freshwater Bosque & Marsh	G533	North American Warm Desert Riparian Low Bosque & Shrubland	46.2	0.4%
Davis Monthan AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G202	Madrean Upper Montane Conifer-Oak Forest & Woodland	0.1	0.0%
Davis Monthan AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G203	Madrean Lower Montane Pine-Oak Forest & Woodland	0.7	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Davis Monthan AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G487	Madrean Juniper Savanna & Woodland	13.1	0.1%
Davis Monthan AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	3.5	0.0%
Davis Monthan AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	3.3	0.0%
Davis Monthan AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	6.2	0.1%
Davis Monthan AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	0.2	0.0%
Davis Monthan AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	1.6	0.0%
Davis Monthan AFB Total				**10,552.2**	**100.0%**
Dobbins ARB	Developed - Combined High, Medium, Low, and Roads			1,538.9	60.9%
Dobbins ARB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	465.6	18.4%
Dobbins ARB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	119.0	4.7%
Dobbins ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G012	Shortleaf Pine-Oak Forest	3.2	0.1%
Dobbins ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G020	Appalachian & Interior Mesic Forest	70.5	2.8%
Dobbins ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G165	Piedmont & Central Atlantic Coastal Plain Oak Forest	130.8	5.2%
Dobbins ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G601	Chinkapin Oak-Shumard Oak-Blue Ash Alkaline Forest	1.4	0.1%
Dobbins ARB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	105.0	4.2%
Dobbins ARB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	55.2	2.2%
Dobbins ARB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	14.9	0.6%
Dobbins ARB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	7.1	0.3%
Dobbins ARB	Open Water	11.A	Open Water	6.0	0.2%
Dobbins ARB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	4.7	0.2%
Dobbins ARB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	2.4	0.1%
Dobbins ARB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	0.3	0.0%
Dobbins ARB Total				**2,525.1**	**100.0%**
Dover AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,420.3	44.8%
Dover AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	25.1	0.8%
Dover AFB	Developed - Combined High, Medium, Low, and Roads			1,443.8	45.5%
Dover AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	66.3	2.1%
Dover AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G039	Northern Atlantic Coastal Hardwood & Conifer Swamp	61.8	1.9%
Dover AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	41.4	1.3%
Dover AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	38.3	1.2%
Dover AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	13.8	0.4%
Dover AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	20.4	0.6%
Dover AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	16.0	0.5%
Dover AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G016	Northeastern Chinkapin Oak-Red-cedar Forest & Woodland	0.0	0.0%
Dover AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G495	North Atlantic Maritime Scrub Forest	0.2	0.0%
Dover AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G650	Northeastern Oak-Hickory Forest & Woodland	6.4	0.2%
Dover AFB	Open Water	11.A	Open Water	6.2	0.2%
Dover AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	4.3	0.1%
Dover AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	2.9	0.1%
Dover AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	1.9	0.1%
Dover AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G120	Atlantic & Gulf Coast Brackish Tidal Marsh	0.0	0.0%
Dover AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	1.0	0.0%
Dover AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	1.0	0.0%
Dover AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.8	0.0%
Dover AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	0.4	0.0%
Dover AFB Total				**3,172.1**	**100.0%**
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G296	Mojave Mid-Elevation Mixed Desert Scrub	726.5	0.2%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	54,118.0	16.3%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	175.6	0.1%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	15,549.2	4.7%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	234.5	0.1%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	11,219.2	3.4%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	27,699.8	8.3%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G311	Intermountain Semi-Desert Grassland	177.5	0.1%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G559	Great Basin-Intermountain Shrub & Herb Wash-Arroyo	7,950.4	2.4%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	1,743.1	0.5%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	93,913.7	28.2%
Dugway Proving Ground	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G775	Intermountain Sparsely Vegetated Dune Scrub & Grassland	2,839.1	0.9%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Dugway Proving Ground	2.B.2.Na Western North American Grassland & Shrubland	G268	Southern Rocky Mountain Montane-Subalpine Grassland	2.4	0.0%
Dugway Proving Ground	2.B.2.Na Western North American Grassland & Shrubland	G273	Central Rocky Mountain Lower Montane Foothill & Valley Grassland	308.7	0.1%
Dugway Proving Ground	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	297.2	0.1%
Dugway Proving Ground	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	0.4	0.0%
Dugway Proving Ground	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	93,770.5	28.2%
Dugway Proving Ground	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	22.0	0.0%
Dugway Proving Ground	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	10,755.9	3.2%
Dugway Proving Ground	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	4,082.9	1.2%
Dugway Proving Ground	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G247	Great Basin Pinyon-Juniper Woodland	1,006.4	0.3%
Dugway Proving Ground	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G249	Intermountain Basins Curl-leaf Mountain-mahogany Scrub & Woodland	0.7	0.0%
Dugway Proving Ground	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	2,556.1	0.8%
Dugway Proving Ground	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G282	Western North American Montane Sclerophyll Scrub	1,225.9	0.4%
Dugway Proving Ground	Developed - Combined High, Medium, Low, and Roads			1,162.0	0.3%
Dugway Proving Ground	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	658.5	0.2%
Dugway Proving Ground	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	126.3	0.0%
Dugway Proving Ground	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	260.1	0.1%
Dugway Proving Ground	Open Water	11.A	Open Water	151.5	0.0%
Dugway Proving Ground	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	1.1	0.0%
Dugway Proving Ground	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	58.5	0.0%
Dugway Proving Ground	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	15.3	0.0%
Dugway Proving Ground	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	14.4	0.0%
Dugway Proving Ground	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	4.1	0.0%
Dugway Proving Ground	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	2.4	0.0%
Dugway Proving Ground	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.9	0.0%
Dugway Proving Ground	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G226	Southern Rocky Mountain White Fir-Douglas-fir Dry Forest	0.2	0.0%
Dugway Proving Ground Total				**332,831.3**	**100.0%**
Dyess AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,984.5	37.0%
Dyess AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	256.7	4.8%
Dyess AFB	Developed - Combined High, Medium, Low, and Roads			1,462.9	27.3%
Dyess AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	171.7	3.2%
Dyess AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	14.2	0.3%
Dyess AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	215.0	4.0%
Dyess AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	802.4	15.0%
Dyess AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	329.0	6.1%
Dyess AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	38.0	0.7%
Dyess AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G126	Southern Plateau Dry Forest & Woodland	32.7	0.6%
Dyess AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	24.7	0.5%
Dyess AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	18.4	0.3%
Dyess AFB	Open Water	11.A	Open Water	11.3	0.2%
Dyess AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	2.4	0.0%
Dyess AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	1.5	0.0%
Dyess AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	0.7	0.0%
Dyess AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G017	Southeastern Great Plains Post Oak-Blackjack Oak Forest & Woodland	0.7	0.0%
Dyess AFB Total				**5,367.0**	**100.0%**
Edwards AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	140,645.1	45.6%
Edwards AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	4,969.4	1.6%
Edwards AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	431.0	0.1%
Edwards AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G675	North American Warm Semi-Desert Dunes & Sand Flats	6,452.7	2.1%
Edwards AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	8,267.8	2.7%
Edwards AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	5.8	0.0%
Edwards AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	79,368.5	25.7%
Edwards AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G296	Mojave Mid-Elevation Mixed Desert Scrub	28,277.5	9.2%
Edwards AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	29,325.8	9.5%
Edwards AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	1.6	0.0%
Edwards AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G312	Colorado Plateau Blackbrush-Mormon-tea Shrubland	0.2	0.0%
Edwards AFB	Developed - Combined High, Medium, Low, and Roads			7,775.2	2.5%
Edwards AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,891.9	0.6%
Edwards AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	391.4	0.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Edwards AFB	Open Water	11.A	Open Water	244.2	0.1%
Edwards AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	120.5	0.0%
Edwards AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	11.6	0.0%
Edwards AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	54.9	0.0%
Edwards AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	66.5	0.0%
Edwards AFB	2.C.4.Nc Southwestern North American Warm Desert Freshwater Bosque & Marsh	G533	North American Warm Desert Riparian Low Bosque & Shrubland	48.5	0.0%
Edwards AFB	2.B.1.Na Californian Scrub	G257	California Xeric Chaparral	31.5	0.0%
Edwards AFB	2.B.1.Na Californian Scrub	G261	California Mesic & Pre-montane Chaparral	4.0	0.0%
Edwards AFB	1.B.2.Nd Vancouverian Cool Temperate Forest	G344	Californian Montane Conifer Forest & Woodland	9.3	0.0%
Edwards AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	4.2	0.0%
Edwards AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	1.3	0.0%
Edwards AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G282	Western North American Montane Sclerophyll Scrub	1.1	0.0%
Edwards AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G202	Madrean Upper Montane Conifer-Oak Forest & Woodland	1.1	0.0%
Edwards AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.9	0.0%
Edwards AFB	1.B.1.Nc Californian Warm Temperate Forest	G195	California Broadleaf Forest & Woodland	0.0	0.0%
Edwards AFB	1.B.1.Nc Californian Warm Temperate Forest	G208	California Moist Coastal Mixed Evergreen Forest	0.5	0.0%
Edwards AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.4	0.0%
Edwards AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.4	0.0%
Edwards AFB Total				**308,404.9**	**100.0%**
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G007	Southern Mesic Beech-Magnolia-Oak Forest	475.2	0.1%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	16,326.2	3.5%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G029	Southeastern Exotic Ruderal Forest	1.1	0.0%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	1,012.8	0.2%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G154	Xeric Longleaf Pine Woodland	185,896.8	39.9%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	15,617.4	3.4%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G596	Mesic Longleaf Pine Flatwoods-Spodosol Woodland	25,007.7	5.4%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	41,980.1	9.0%
Eglin AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G798	Coastal Live Oak-Hickory-Palmetto Forest	38.1	0.0%
Eglin AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	54,903.1	11.8%
Eglin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	13,449.5	2.9%
Eglin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	7,736.3	1.7%
Eglin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	26.4	0.0%
Eglin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	5,093.7	1.1%
Eglin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	7,332.5	1.6%
Eglin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G130	Nonriverine Wet Oak Flatwoods	14.5	0.0%
Eglin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	46.7	0.0%
Eglin AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	31,274.8	6.7%
Eglin AFB	Developed - Combined High, Medium, Low, and Roads			27,927.5	6.0%
Eglin AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	9,210.7	2.0%
Eglin AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	6,047.6	1.3%
Eglin AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	8,168.6	1.8%
Eglin AFB	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G494	South Atlantic & Gulf Shrub & Grass Coast & Dune	825.1	0.2%
Eglin AFB	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G661	South Atlantic & Gulf Coastal Beach	2,451.9	0.5%
Eglin AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G110	Atlantic & Gulf Coastal Plain Freshwater Tidal Marsh	230.8	0.0%
Eglin AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G111	Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	1,048.6	0.2%
Eglin AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G187	Southeastern Coastal Plain Seepage Wetland	9.3	0.0%
Eglin AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G188	Coastal Plain River & Basin Freshwater Marsh	183.3	0.0%
Eglin AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G777	Atlantic & Gulf Coastal Interdunal Marsh & Prairie	93.9	0.0%
Eglin AFB	Open Water	11.A	Open Water	975.2	0.2%
Eglin AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	759.4	0.2%
Eglin AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	460.7	0.1%
Eglin AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	447.3	0.1%
Eglin AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	405.9	0.1%
Eglin AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	204.5	0.0%
Eglin AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G122	Atlantic & Gulf Coast Low Salt Marsh	4.5	0.0%
Eglin AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G123	Atlantic & Gulf Coast Saline Flat & Panne	2.3	0.0%
Eglin AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	71.7	0.0%
Eglin AFB	6.B.1.Na Eastern North American Temperate Cliff Scree & Rock Vegetation	G106	Eastern North American Temperate Cliff	16.0	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Eglin AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	12.2	0.0%
Eglin AFB	1.A.5.Ua Atlantic & Caribbean & East Pacific Mangrove	G004	Caribbean Fringe Mangrove	3.3	0.0%
Eglin AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	2.0	0.0%
Eglin AFB	2.A.3.Ee Caribbeo-Mesoamerican Dine & Coastal Grassland & Shrubland	G127	Caribbean Coastal Beach & Dune Vegetation	1.9	0.0%
Eglin AFB	1.A.1.Ea Caribbeo-Mesoamerican Dry Forest	G765	Caribbean Hardwood Hammock & Coastal Strand Forest	0.4	0.0%
Eglin AFB	7.D.1.1 Agricultural Pond Vegetation	G734	Tropical & Temperate Aquaculture	0.2	0.0%
Eglin AFB Total				**465,797.6**	**100.0%**
Eielson AFB	1.B.4.Na North American Boreal Forest & Woodland Division	G579	Central Alaskan-Yukon Boreal Mesic Forest Group	10,598.0	53.5%
Eielson AFB	Developed - Combined High, Medium, Low, and Roads			4,039.8	20.4%
Eielson AFB	1.B.5.Na North American Boreal Flooded & Swamp Forest Division	G546	Alaskan-Yukon Boreal Black Spruce Wet Forest Group	2,757.9	13.9%
Eielson AFB	1.B.5.Na North American Boreal Flooded & Swamp Forest Division	G548	Alaskan-Yukon Boreal Flooded & Rich Swamp Group	214.5	1.1%
Eielson AFB	Open Water	11.A	Open Water	856.4	4.3%
Eielson AFB	2.C.2.Na North American Bog & Fen	G360	Western North American Boreal Bog & Acidic Fen Group	542.7	2.7%
Eielson AFB	2.C.2.Na North American Bog & Fen Division	G361	Western North American Boreal Alkaline Fen Group	2.9	0.0%
Eielson AFB	2.C.4.Nb Western North American Temperate & Boreal Freshwater Marsh, Wet Meadow & Sh	G528	Western Boreal Wet Meadow & Marsh Group	150.6	0.8%
Eielson AFB	2.C.4.Nb Western North American Temperate & Boreal Freshwater Marsh, Wet Meadow & Sh	G866	Western Boreal Wet Alder-Willow Tall Shrub Swamp Group	254.5	1.3%
Eielson AFB	2.B.3.Na North American Boreal Grassland & Shrubland Division	G356	Western Boreal Mesic Birch-Willow Low Shrubland Group	100.5	0.5%
Eielson AFB	2.B.3.Na North American Boreal Grassland & Shrubland Division	G357	Western Boreal Mesic Alder-Willow Shrubland Group	11.8	0.1%
Eielson AFB	2.B.3.Na North American Boreal Grassland & Shrubland Division	G358	Western Boreal Mesic Grassland & Meadow Group	36.9	0.2%
Eielson AFB	2.B.3.Na North American Boreal Grassland & Shrubland Division	G359	Western Boreal Dry Shrubland & Grassland Group	15.1	0.1%
Eielson AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	115.4	0.6%
Eielson AFB	4.B.1.Nb Western North American Alpine Tundra	G867	Western Boreal Alpine Mesic Dwarf Birch-Willow Shrubland Group	8.5	0.0%
Eielson AFB	4.B.1.Nb Western North American Alpine Tundra Division	G613	Western Boreal Alpine Dwarf-shrubland Group	49.4	0.2%
Eielson AFB	4.B.2.Xa Arctic Tundra & Barrens	G897	Arctic Low Shrub Tundra Group	35.6	0.2%
Eielson AFB	4.B.2.Xa Arctic Tundra & Barrens	G898	Arctic Herbaceous Tundra Group	0.2	0.0%
Eielson AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	22.7	0.1%
Eielson AFB	6.B.1.Nc North American Boreal Cliff, Scree & Rock Vegetation Division	G822	Western Boreal Cliff, Scree & Rock Vegetation Group	1.3	0.0%
Eielson AFB	7.B Herbaceous Agricultural Vegetation	7.B Herbaceous	Agriculture-Pasture and Hay	0.3	0.0%
Eielson AFB Total				**19,814.9**	**100.0%**
Ellsworth AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	40.7	0.5%
Ellsworth AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	3,215.5	40.7%
Ellsworth AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	208.1	2.6%
Ellsworth AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G331	Northern Great Plains Dry Mixedgrass Prairie	1,064.1	13.5%
Ellsworth AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	142.3	1.8%
Ellsworth AFB	Developed - Combined High, Medium, Low, and Roads			2,105.9	26.6%
Ellsworth AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	538.1	6.8%
Ellsworth AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	127.0	1.6%
Ellsworth AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G336	Great Plains Wet Prairie Wet Meadow & Seepage Fen	41.6	0.5%
Ellsworth AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	207.0	2.6%
Ellsworth AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G566	Great Plains Badlands Vegetation	81.6	1.0%
Ellsworth AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	1.6	0.0%
Ellsworth AFB	Open Water	11.A	Open Water	46.1	0.6%
Ellsworth AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G301	Intermountain Dwarf Saltbush-Sagebrush Scrub	0.5	0.0%
Ellsworth AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	24.3	0.3%
Ellsworth AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	15.4	0.2%
Ellsworth AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	26.0	0.3%
Ellsworth AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	8.7	0.1%
Ellsworth AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G145	Northern & Central Great Plains Mesic Woodland	6.6	0.1%
Ellsworth AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G216	Northwestern Great Plains-Black Hills Ponderosa Pine Forest & Woodland	2.9	0.0%
Ellsworth AFB	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	1.0	0.0%
Ellsworth AFB	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	1.0	0.0%
Ellsworth AFB	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	0.6	0.0%
Ellsworth AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	0.7	0.0%
Ellsworth AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	0.2	0.0%
Ellsworth AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.2	0.0%
Ellsworth AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.2	0.0%
Ellsworth AFB Total				**7,908.0**	**100.0%**
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G210	Central Rocky Mountain Douglas-fir-Pine Forest	250.7	3.3%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G211	Central Rocky Mountain Mesic Grand Fir-Douglas-fir Forest	1,026.0	13.7%
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G213	Central Rocky Mountain Ponderosa Pine Woodland & Savanna	108.9	1.5%
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G217	Central Rocky Mountain Interior Western Red-cedar-Western Hemlock Forest	1,065.5	14.2%
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G218	Rocky Mountain Subalpine Moist Spruce-Fir Forest & Woodland	269.0	3.6%
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G219	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest & Woodland	53.8	0.7%
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G220	Rocky Mountain Lodgepole Pine Forest & Woodland	98.4	1.3%
Fairchild AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G223	Northern Rocky Mountain Whitebark Pine-Subalpine Larch Woodland	1.1	0.0%
Fairchild AFB	Developed - Combined High, Medium, Low, and Roads			2,347.8	31.3%
Fairchild AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	0.2	0.0%
Fairchild AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	475.2	6.3%
Fairchild AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G526	Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland	3.9	0.1%
Fairchild AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G527	Western Montane-Subalpine Riparian & Seep Shrubland	0.2	0.0%
Fairchild AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	66.6	0.9%
Fairchild AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	231.1	3.1%
Fairchild AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	154.6	2.1%
Fairchild AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G307	Columbia Plateau Scabland Shrubland	37.1	0.5%
Fairchild AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	0.3	0.0%
Fairchild AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G311	Intermountain Semi-Desert Grassland	0.2	0.0%
Fairchild AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	21.6	0.3%
Fairchild AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	45.4	0.6%
Fairchild AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	380.3	5.1%
Fairchild AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	105.8	1.4%
Fairchild AFB	2.B.2.Na Western North American Grassland & Shrubland	G267	Central Rocky Mountain Montane Grassland	0.7	0.0%
Fairchild AFB	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	3.8	0.1%
Fairchild AFB	2.B.2.Na Western North American Grassland & Shrubland	G272	Central Rocky Mountain Montane-Foothill Deciduous Shrubland	28.3	0.4%
Fairchild AFB	2.B.2.Na Western North American Grassland & Shrubland	G273	Central Rocky Mountain Lower Montane Foothill & Valley Grassland	78.3	1.0%
Fairchild AFB	2.B.2.Na Western North American Grassland & Shrubland	G305	Central Rocky Mountain High Montane Mesic Shrubland	50.9	0.7%
Fairchild AFB	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	304.6	4.1%
Fairchild AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	116.8	1.6%
Fairchild AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	71.9	1.0%
Fairchild AFB	1.B.3.Nc Rocky Mountain & Great Basin Montane Flooded & Swamp Forest	G506	Rocky Mountain & Great Basin Montane Riparian Forest	9.6	0.1%
Fairchild AFB	1.B.3.Nc Rocky Mountain & Great Basin Montane Flooded & Swamp Forest	G796	Northern Rocky Mountain Lowland & Foothill Riparian Forest	50.9	0.7%
Fairchild AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	12.9	0.2%
Fairchild AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G282	Western North American Montane Sclerophyll Scrub	12.7	0.2%
Fairchild AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G565	Rocky Mountain Cliff Scree & Rock Vegetation	6.5	0.1%
Fairchild AFB	Open Water	11.A	Open Water	2.9	0.0%
Fairchild AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	2.2	0.0%
Fairchild AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	1.6	0.0%
Fairchild AFB Total				**7,498.3**	**100.0%**
FE Warren AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G068	Great plains Sand Grassland	0.9	0.0%
FE Warren AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	1,033.6	17.6%
FE Warren AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G331	Northern Great Plains Dry Mixedgrass Prairie	2,632.8	44.8%
FE Warren AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	2.3	0.0%
FE Warren AFB	Developed - Combined High, Medium, Low, and Roads			1,178.5	20.1%
FE Warren AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	314.3	5.4%
FE Warren AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	262.4	4.5%
FE Warren AFB	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	140.3	2.4%
FE Warren AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	68.9	1.2%
FE Warren AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	66.0	1.1%
FE Warren AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	41.3	0.7%
FE Warren AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	34.6	0.6%
FE Warren AFB	Open Water	11.A	Open Water	31.6	0.5%
FE Warren AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	10.5	0.2%
FE Warren AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	7.5	0.1%
FE Warren AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	4.5	0.1%
FE Warren AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G252	Southern Rocky Mountain Juniper Woodland & Savanna	17.5	0.3%
FE Warren AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	9.4	0.2%
FE Warren AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G209	Rocky Mountain Foothill-Rock Outcrop Limber Pine-Juniper Woodland	7.8	0.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
FE Warren AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	7.3	0.1%
FE Warren AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	2.7	0.0%
FE Warren AFB Total				5,874.7	100.0%
Goodfellow AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	573.4	47.3%
Goodfellow AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	121.5	10.0%
Goodfellow AFB	Developed - Combined High, Medium, Low, and Roads			471.5	38.9%
Goodfellow AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	0.8	0.1%
Goodfellow AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	9.9	0.8%
Goodfellow AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	32.0	2.6%
Goodfellow AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	0.7	0.1%
Goodfellow AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	0.6	0.1%
Goodfellow AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.4	0.0%
Goodfellow AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G126	Southern Plateau Dry Forest & Woodland	0.2	0.0%
Goodfellow AFB	Open Water	11.A	Open Water	0.0	0.0%
Goodfellow AFB Total				1,211.1	100.0%
Grand Forks AFB	Developed - Combined High, Medium, Low, and Roads			1,496.6	29.0%
Grand Forks AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	1,256.5	24.3%
Grand Forks AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,087.8	21.0%
Grand Forks AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	131.2	2.5%
Grand Forks AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	740.3	14.3%
Grand Forks AFB	Open Water	11.A	Open Water	168.6	3.3%
Grand Forks AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	107.4	2.1%
Grand Forks AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G075	Northern Great Plains Tallgrass Prairie	84.7	1.6%
Grand Forks AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G151	Sand & Gravel Tallgrass Prairie	2.4	0.0%
Grand Forks AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	38.2	0.7%
Grand Forks AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G021	North-Central Beech-Maple-Basswood Forest	0.7	0.0%
Grand Forks AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	3.3	0.1%
Grand Forks AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G146	Northern Great Plains Tallgrass Aspen Parkland	5.3	0.1%
Grand Forks AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G329	Northern & Central Great Plains Oak Woodland	3.5	0.1%
Grand Forks AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	8.9	0.2%
Grand Forks AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G552	Northern & Central Native Ruderal Flooded & Swamp Forest	0.2	0.0%
Grand Forks AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G652	Silver Maple-Green Ash-Sycamore Floodplain Forest	12.2	0.2%
Grand Forks AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	6.9	0.1%
Grand Forks AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G770	Midwest Wet Prairie & Wet Meadow	5.3	0.1%
Grand Forks AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	7.6	0.1%
Grand Forks AFB Total				5,167.7	100.0%
Hanscom AFB	Developed - Combined High, Medium, Low, and Roads			853.0	42.0%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G025	Laurentian & Acadian Pine-Oak Forest & Woodland	9.7	0.5%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	55.0	2.7%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G161	Pitch Pine Barrens	2.0	0.1%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G495	North Atlantic Maritime Scrub Forest	36.0	1.8%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	36.9	1.8%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G650	Northeastern Oak-Hickory Forest & Woodland	37.6	1.9%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G741	Laurentian & Acadian hemlock-White Pine-Hardwood Forest	26.4	1.3%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G742	Appalachian & Allegheny Northern Hardwood-Conifer Forest	145.7	7.2%
Hanscom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G743	Laurentian & Acadian Hardwood Forest	189.2	9.3%
Hanscom AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	126.5	6.2%
Hanscom AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	105.1	5.2%
Hanscom AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	122.8	6.1%
Hanscom AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G039	Northern Atlantic Coastal Hardwood & Conifer Swamp	0.0	0.0%
Hanscom AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G045	Northern Conifer & Hardwood Acidic Swamp	13.1	0.6%
Hanscom AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G046	Laurentian-Acadian-Allegheny Alkaline Swamp	7.6	0.4%
Hanscom AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G597	North-Central Flatwoods & Swamp Forest	95.6	4.7%
Hanscom AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	0.2	0.0%
Hanscom AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	64.1	3.2%
Hanscom AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G125	Eastern North American Freshwater Marsh	0.2	0.0%
Hanscom AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	0.9	0.0%
Hanscom AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G771	Laurentian & Northeast Wet Meadow	21.3	1.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Hanscom AFB	2.C.2.Na North American Bog & Fen	G183	Northeast & Midwest Prairie Alkaline Fen	0.2	0.0%
Hanscom AFB	2.C.2.Na North American Bog & Fen	G185	Eastern North American Boreal Alkaline Fen	4.1	0.2%
Hanscom AFB	2.C.2.Na North American Bog & Fen	G745	Eastern North American Sub-Boreal Acidic Bog & Fen	12.7	0.6%
Hanscom AFB	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G660	North Atlantic Coastal Beach	17.0	0.8%
Hanscom AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	15.7	0.8%
Hanscom AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	11.2	0.5%
Hanscom AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	9.2	0.5%
Hanscom AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	7.4	0.4%
Hanscom AFB	Open Water	11.A	Open Water	2.8	0.1%
Hanscom AFB Total				2,029.2	100.0%
Hill AFB	Developed - Combined High, Medium, Low, and Roads			2,720.8	34.3%
Hill AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	2,205.2	27.8%
Hill AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,090.1	13.7%
Hill AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	216.3	2.7%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G296	Mojave Mid-Elevation Mixed Desert Scrub	1.5	0.0%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	37.5	0.5%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	1.7	0.0%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	161.8	2.0%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	94.8	1.2%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	83.3	1.0%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	203.4	2.6%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G559	Great Basin-Intermountain Shrub & Herb Wash-Arroyo	13.6	0.2%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	8.4	0.1%
Hill AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	597.9	7.5%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G209	Rocky Mountain Foothill-Rock Outcrop Limber Pine-Juniper Woodland	36.0	0.5%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G211	Central Rocky Mountain Mesic Grand Fir-Douglas-fir Forest	0.2	0.0%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G215	Middle Rocky Mountain Montane Douglas-fir Forest & Woodland	0.4	0.0%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G218	Rocky Mountain Subalpine Moist Spruce-Fir Forest & Woodland	2.6	0.0%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G219	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest & Woodland	57.7	0.7%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G220	Rocky Mountain Lodgepole Pine Forest & Woodland	13.5	0.2%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G222	Rocky Mountain Subalpine-Montane Aspen Forest & Woodland	13.6	0.2%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G223	Northern Rocky Mountain Whitebark Pine-Subalpine Larch Woodland	6.4	0.1%
Hill AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G226	Southern Rocky Mountain White Fir-Douglas-fir Dry Forest	5.1	0.1%
Hill AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	43.2	0.5%
Hill AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G247	Great Basin Pinyon-Juniper Woodland	36.2	0.5%
Hill AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G249	Intermountain Basins Curl-leaf Mountain-mahogany Scrub & Woodland	3.6	0.0%
Hill AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	74.1	0.9%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G267	Central Rocky Mountain Montane Grassland	0.2	0.0%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G268	Southern Rocky Mountain Montane-Subalpine Grassland	0.0	0.0%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	1.5	0.0%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G273	Central Rocky Mountain Lower Montane Foothill & Valley Grassland	6.9	0.1%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	0.5	0.0%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	31.0	0.4%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G305	Central Rocky Mountain High Montane Mesic Shrubland	0.4	0.0%
Hill AFB	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	22.6	0.3%
Hill AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	60.9	0.8%
Hill AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G520	Vancouverian & Rocky Mountain Subalpine & Alpine Snowbed Wet Meadow &	1.2	0.0%
Hill AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	7.5	0.1%
Hill AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	15.2	0.2%
Hill AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G527	Western Montane-Subalpine Riparian & Seep Shrubland	5.0	0.1%
Hill AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	0.7	0.0%
Hill AFB	4.B.1.Nb Western North American Alpine Dwarf-Shrub & Grassland	G314	Rocky Mountain & Sierran Alpine Turf & Fell-Field	20.3	0.3%
Hill AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	11.0	0.1%
Hill AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G282	Western North American Montane Sclerophyll Scrub	10.0	0.1%
Hill AFB	1.B.3.Nc Rocky Mountain & Great Basin Montane Flooded & Swamp Forest	G506	Rocky Mountain & Great Basin Montane Riparian Forest	5.8	0.1%
Hill AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	3.9	0.0%
Hill AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	1.6	0.0%
Hill AFB	Open Water	11.A	Open Water	1.1	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Hill AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.7	0.0%
Hill AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.4	0.0%
Hill AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G565	Rocky Mountain Cliff Scree & Rock Vegetation	0.4	0.0%
Hill AFB Total				7,937.6	100.0%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G286	Chihuahuan Desert Succulent Scrub	102.3	0.2%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G287	Chihuahuan Desert Sand Scrub	452.8	0.9%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	6,280.5	12.3%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G299	Chihuahuan Desert Lowland Basin Scrub	18,652.1	36.6%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G489	Chihuahuan Semi-Desert Lowland Grassland	58.7	0.1%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	4,608.7	9.1%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G492	Chihuahuan Gypsophilous Grassland	13,928.0	27.4%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	48.4	0.1%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	86.3	0.2%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G675	North American Warm Semi-Desert Dunes & Sand Flats	183.8	0.4%
Holloman AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	326.2	0.6%
Holloman AFB	Developed - Combined High, Medium, Low, and Roads			2,697.9	5.3%
Holloman AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	39.6	0.1%
Holloman AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	2,089.7	4.1%
Holloman AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	751.4	1.5%
Holloman AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	119.5	0.2%
Holloman AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	186.9	0.4%
Holloman AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	117.2	0.2%
Holloman AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	17.1	0.0%
Holloman AFB	Open Water	11.A	Open Water	126.5	0.2%
Holloman AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	27.4	0.1%
Holloman AFB	2.C.4.Nc Southwestern North American Warm Desert Freshwater Bosque & Marsh	G533	North American Warm Desert Riparian Low Bosque & Shrubland	8.7	0.0%
Holloman AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	6.0	0.0%
Holloman AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	4.4	0.0%
Holloman AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G487	Madrean Juniper Savanna & Woodland	3.1	0.0%
Holloman AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G281	Western Madrean Chaparral	0.4	0.0%
Holloman AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	0.2	0.0%
Holloman AFB Total				50,924.0	100.0%
Homestead AFB	Developed - Combined High, Medium, Low, and Roads			787.9	39.8%
Homestead AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	543.2	27.4%
Homestead AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	1.6	0.1%
Homestead AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	162.2	8.2%
Homestead AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G177	Florida Xeric Scrub	0.0	0.0%
Homestead AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	113.3	5.7%
Homestead AFB	Open Water	11.A	Open Water	106.4	5.4%
Homestead AFB	2.C.3.Ef Caribbeo-Mesoamerican Freshwater Marsh, Wet Meadow & Shrubland	G129	South Florida Freshwater Marsh	86.0	4.3%
Homestead AFB	1.A.4.Ed Caribbean & Central American Flooded & Swamp Forest	G002	Caribbean Lowland Swamp	80.6	4.1%
Homestead AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	36.4	1.8%
Homestead AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	5.5	0.3%
Homestead AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	0.3	0.0%
Homestead AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	21.4	1.1%
Homestead AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G005	South Florida Slash Pine Woodland	15.6	0.8%
Homestead AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	7.1	0.4%
Homestead AFB	1.A.1.Ea Caribbeo-Mesoamerican Dry Forest	G765	Caribbean Hardwood Hammock & Coastal Strand Forest	10.7	0.5%
Homestead AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	2.8	0.1%
Homestead AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	0.7	0.0%
Homestead AFB Total				1,981.7	100.0%
JB Andrews	Developed - Combined High, Medium, Low, and Roads			2,564.8	35.5%
JB Andrews	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,369.0	18.9%
JB Andrews	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	424.9	5.9%
JB Andrews	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G161	Pitch Pine Barrens	46.0	0.6%
JB Andrews	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G650	Northeastern Oak-Hickory Forest & Woodland	1,054.7	14.6%
JB Andrews	1.B.1.Na Southeastern North American Warm Temperate Forest	G029	Southeastern Exotic Ruderal Forest	2.4	0.0%
JB Andrews	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	842.1	11.6%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
JB Andrews	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	75.5	1.0%
JB Andrews	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	364.7	5.0%
JB Andrews	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	168.0	2.3%
JB Andrews	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	115.8	1.6%
JB Andrews	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	85.8	1.2%
JB Andrews	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G039	Northern Atlantic Coastal Hardwood & Conifer Swamp	76.2	1.1%
JB Andrews	Open Water	11.A	Open Water	17.6	0.2%
JB Andrews	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	14.2	0.2%
JB Andrews	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	7.6	0.1%
JB Andrews	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	0.7	0.0%
JB Andrews	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	0.4	0.0%
JB Andrews	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	0.2	0.0%
JB Andrews Total				**7,230.7**	**100.0%**
JB Charleston	1.B.1.Na Southeastern North American Warm Temperate Forest	G007	Southern Mesic Beech-Magnolia-Oak Forest	116.6	0.5%
JB Charleston	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	918.1	4.1%
JB Charleston	1.B.1.Na Southeastern North American Warm Temperate Forest	G029	Southeastern Exotic Ruderal Forest	61.2	0.3%
JB Charleston	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	3,415.0	15.4%
JB Charleston	1.B.1.Na Southeastern North American Warm Temperate Forest	G154	Xeric Longleaf Pine Woodland	58.8	0.3%
JB Charleston	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	164.1	0.7%
JB Charleston	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	100.8	0.5%
JB Charleston	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	2,450.6	11.0%
JB Charleston	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	2,053.6	9.3%
JB Charleston	Developed - Combined High, Medium, Low, and Roads			3,955.6	17.8%
JB Charleston	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	3,528.6	15.9%
JB Charleston	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	68.6	0.3%
JB Charleston	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	1,268.8	5.7%
JB Charleston	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	1.1	0.0%
JB Charleston	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	1.8	0.0%
JB Charleston	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	42.9	0.2%
JB Charleston	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	103.3	0.5%
JB Charleston	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	58.4	0.3%
JB Charleston	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G120	Atlantic & Gulf Coast Brackish Tidal Marsh	0.4	0.0%
JB Charleston	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	1,215.9	5.5%
JB Charleston	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G122	Atlantic & Gulf Coast Low Salt Marsh	54.6	0.2%
JB Charleston	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G123	Atlantic & Gulf Coast Saline Flat & Panne	15.7	0.1%
JB Charleston	2.C.2.Nb Southeastern North American Coastal Bog & Fen	G186	Southeastern Coastal Plain Pocosin & Shrub Bog	495.4	2.2%
JB Charleston	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G110	Atlantic & Gulf Coastal Plain Freshwater Tidal Marsh	538.5	2.4%
JB Charleston	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G111	Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	1.0	0.0%
JB Charleston	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	629.1	2.8%
JB Charleston	Open Water	11.A	Open Water	480.4	2.2%
JB Charleston	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	183.8	0.8%
JB Charleston	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	50.3	0.2%
JB Charleston	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G165	Piedmont & Central Atlantic Coastal Plain Oak Forest	44.3	0.2%
JB Charleston	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	44.3	0.2%
JB Charleston	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	39.5	0.2%
JB Charleston	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	17.3	0.1%
JB Charleston	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G494	South Atlantic & Gulf Shrub & Grass Coast & Dune	0.4	0.0%
JB Charleston	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G661	South Atlantic & Gulf Coastal Beach	2.7	0.0%
JB Charleston	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	1.8	0.0%
JB Charleston Total				**22,183.2**	**100.0%**
JB Elmendorf-Richardson	1.B.4.Na North American Boreal Forest & Woodland	G857	Southern Alaskan Boreal Montane Woodland Group	781.5	1.0%
JB Elmendorf-Richardson	1.B.4.Na North American Boreal Forest & Woodland Division	G349	Alaskan-Yukon Boreal Dry Aspen Forest Group	103.8	0.1%
JB Elmendorf-Richardson	1.B.4.Na North American Boreal Forest & Woodland Division	G579	Central Alaskan-Yukon Boreal Mesic Forest Group	5,945.1	7.6%
JB Elmendorf-Richardson	1.B.4.Na North American Boreal Forest & Woodland Division	G627	Southern Alaskan Boreal Mesic Forest Group	35,913.7	45.7%
JB Elmendorf-Richardson	Developed - Combined High, Medium, Low, and Roads			10,280.5	13.1%
JB Elmendorf-Richardson	4.B.1.Nb Western North American Alpine Dwarf-Shrub & Grassland	G317	North Pacific Alpine-Subalpine Dwarf-Shrubland & Heath	5,937.2	7.6%
JB Elmendorf-Richardson	4.B.1.Nb Western North American Alpine Dwarf-Shrub & Grassland	G319	North Pacific Alpine-Subalpine Bedrock & Scree	1,327.3	1.7%
JB Elmendorf-Richardson	4.B.1.Nb Western North American Alpine Dwarf-Shrub & Grassland	G320	North Pacific Alpine-Subalpine Turf & Herbaceous Meadow	614.5	0.8%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
JB Elmendorf-Richardson	4.B.1.Nb Western North American Alpine Tundra	G867	Western Boreal Alpine Mesic Dwarf Birch-Willow Shrubland Group	192.4	0.2%
JB Elmendorf-Richardson	4.B.1.Nb Western North American Alpine Tundra Division	G613	Western Boreal Alpine Dwarf-shrubland Group	526.9	0.7%
JB Elmendorf-Richardson	4.B.1.Nb Western North American Alpine Tundra Division	G747	Western Boreal Alpine Acidic Mesic Meadow Group	0.6	0.0%
JB Elmendorf-Richardson	4.B.1.Nb Western North American Alpine Tundra Division	G785	Western Boreal Alpine Cliff, Scree & Rock Vegetation Group	2.3	0.0%
JB Elmendorf-Richardson	1.B.5.Na North American Boreal Flooded & Swamp Forest Division	G546	Alaskan-Yukon Boreal Black Spruce Wet Forest Group	4,528.2	5.8%
JB Elmendorf-Richardson	1.B.5.Na North American Boreal Flooded & Swamp Forest Division	G548	Alaskan-Yukon Boreal Flooded & Rich Swamp Group	1,157.9	1.5%
JB Elmendorf-Richardson	2.B.3.Na North American Boreal Grassland & Shrubland Division	G356	Western Boreal Mesic Birch-Willow Low Shrubland Group	1,187.5	1.5%
JB Elmendorf-Richardson	2.B.3.Na North American Boreal Grassland & Shrubland Division	G357	Western Boreal Mesic Alder-Willow Shrubland Group	1,112.0	1.4%
JB Elmendorf-Richardson	2.B.3.Na North American Boreal Grassland & Shrubland Division	G358	Western Boreal Mesic Grassland & Meadow Group	858.0	1.1%
JB Elmendorf-Richardson	1.B.2.Nd Vancouverian Cool Temperate Forest	G751	North Pacific Western Hemlock-Sitka Spruce-Western Red-cedar Seasonal Rainforest	0.2	0.0%
JB Elmendorf-Richardson	1.B.2.Nd Vancouverian Forest & Woodland Division	G750	Alaskan Maritime Western Hemlock-Sitka Spruce Rainforest Group	16.4	0.0%
JB Elmendorf-Richardson	1.B.2.Nd Vancouverian Forest & Woodland Division	G850	Alaskan Mountain Hemlock Forest Group	1,544.2	2.0%
JB Elmendorf-Richardson	2.C.2.Na North American Bog & Fen	G284	North Pacific Acidic Open Bog & Fen Group	87.6	0.1%
JB Elmendorf-Richardson	2.C.2.Na North American Bog & Fen	G285	North Pacific Alkaline Open Fen Group	62.6	0.1%
JB Elmendorf-Richardson	2.C.2.Na North American Bog & Fen	G360	Western North American Boreal Bog & Acidic Fen Group	1,228.3	1.6%
JB Elmendorf-Richardson	2.C.2.Na North American Bog & Fen Division	G361	Western North American Boreal Alkaline Fen Group	109.2	0.1%
JB Elmendorf-Richardson	2.B.2.Nf Western North American Grassland & Shrubland Division	G354	Vancouverian Alder-Salmonberry-Willow Shrubland Group	1,196.4	1.5%
JB Elmendorf-Richardson	2.B.2.Nf Western North American Grassland & Shrubland Division	G355	Northern Vancouverian Grassland & Meadow Group	38.8	0.0%
JB Elmendorf-Richardson	Open Water	11.A	Open Water	1,178.7	1.5%
JB Elmendorf-Richardson	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G322	Vancouverian Wet Shrubland	18.0	0.0%
JB Elmendorf-Richardson	2.C.4.Nb Western North American Temperate & Boreal Freshwater Marsh, Wet Meadow & Sh	G528	Western Boreal Wet Meadow & Marsh Group	761.7	1.0%
JB Elmendorf-Richardson	2.C.4.Nb Western North American Temperate & Boreal Freshwater Marsh, Wet Meadow & Sh	G866	Western Boreal Wet Alder-Willow Tall Shrub Swamp Group	342.0	0.4%
JB Elmendorf-Richardson	2.C.5.Nc Temperate & Boreal Pacific Coastal Salt Marsh	G499	Temperate Pacific Tidal Salt & Brackish Marsh	1,003.7	1.3%
JB Elmendorf-Richardson	7.B Herbaceous Agricultural Vegetation	7.B Herbaceous	Agriculture-Pasture and Hay	180.9	0.2%
JB Elmendorf-Richardson	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G318	North Vancouverian Montane Massive Bedrock Cliff & Talus	149.1	0.2%
JB Elmendorf-Richardson	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	73.7	0.1%
JB Elmendorf-Richardson	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	68.3	0.1%
JB Elmendorf-Richardson	Barren	8.E	Barren	58.8	0.1%
JB Elmendorf-Richardson	2.C.4.Np Arctic & Boreal Freshwater Marsh, Wet Meadow & Shrubland	G865	Western Boreal Wet Birch-Willow Low Shrubland Group	16.9	0.0%
JB Elmendorf-Richardson	4.B.2.Xa Arctic Tundra & Barrens	G897	Arctic Low Shrub Tundra Group	1.0	0.0%
JB Elmendorf-Richardson	1.B.3.Ng Vancouverian Flooded & Swamp Forest Division	G852	Alaskan Pacific Riparian Forest & Woodland Group	0.2	0.0%
JB Elmendorf-Richardson	6.B.1.Nc North American Boreal Cliff, Scree & Rock Vegetation Division	G822	Western Boreal Cliff, Scree & Rock Vegetation Group	0.2	0.0%
JB Elmendorf-Richardson Total				**78,606.1**	**100.0%**
JB Langley-Eustis	Developed - Combined High, Medium, Low, and Roads			3,133.6	25.6%
JB Langley-Eustis	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,759.5	14.4%
JB Langley-Eustis	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	629.6	5.1%
JB Langley-Eustis	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G120	Atlantic & Gulf Coast Brackish Tidal Marsh	33.9	0.3%
JB Langley-Eustis	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	1,074.2	8.8%
JB Langley-Eustis	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G122	Atlantic & Gulf Coast Low Salt Marsh	532.7	4.3%
JB Langley-Eustis	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G123	Atlantic & Gulf Coast Saline Flat & Panne	161.1	1.3%
JB Langley-Eustis	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	1,000.9	8.2%
JB Langley-Eustis	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	327.3	2.7%
JB Langley-Eustis	Open Water	11.A	Open Water	1,137.5	9.3%
JB Langley-Eustis	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G016	Northeastern Chinkapin Oak-Red-cedar Forest & Woodland	20.5	0.2%
JB Langley-Eustis	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G165	Piedmont & Central Atlantic Coastal Plain Oak Forest	0.7	0.0%
JB Langley-Eustis	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G495	North Atlantic Maritime Scrub Forest	677.2	5.5%
JB Langley-Eustis	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G650	Northeastern Oak-Hickory Forest & Woodland	61.2	0.5%
JB Langley-Eustis	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	457.5	3.7%
JB Langley-Eustis	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	132.2	1.1%
JB Langley-Eustis	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	12.2	0.1%
JB Langley-Eustis	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	118.7	1.0%
JB Langley-Eustis	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G039	Northern Atlantic Coastal Hardwood & Conifer Swamp	507.8	4.1%
JB Langley-Eustis	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	233.5	1.9%
JB Langley-Eustis	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	82.1	0.7%
JB Langley-Eustis	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	68.7	0.6%
JB Langley-Eustis	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	34.9	0.3%
JB Langley-Eustis	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	27.7	0.2%
JB Langley-Eustis	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	14.2	0.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
JB Langley-Eustis	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	8.2	0.1%
JB Langley-Eustis	7.A.1.2 Vineyard	G737	Tropical & Temperate Grape Vineyard	4.2	0.0%
JB Langley-Eustis	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G110	Atlantic & Gulf Coastal Plain Freshwater Tidal Marsh	2.7	0.0%
JB Langley-Eustis	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	1.1	0.0%
JB Langley-Eustis Total				**12,255.8**	**100.0%**
JB MDL	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	404.1	1.0%
JB MDL	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G161	Pitch Pine Barrens	11,097.7	26.3%
JB MDL	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	2,416.7	5.7%
JB MDL	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G039	Northern Atlantic Coastal Hardwood & Conifer Swamp	9,231.0	21.9%
JB MDL	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G552	Northern & Central Native Ruderal Flooded & Swamp Forest	8.9	0.0%
JB MDL	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	0.2	0.0%
JB MDL	Developed - Combined High, Medium, Low, and Roads			6,643.8	15.8%
JB MDL	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	4,228.6	10.0%
JB MDL	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	1,255.7	3.0%
JB MDL	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	2,219.0	5.3%
JB MDL	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G111	Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	1,258.4	3.0%
JB MDL	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G752	Northern & Mid-Atlantic Coastal Wetland	884.6	2.1%
JB MDL	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	1,574.4	3.7%
JB MDL	Open Water	11.A	Open Water	386.8	0.9%
JB MDL	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	234.4	0.6%
JB MDL	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	135.3	0.3%
JB MDL	7.A.1.3 Bush Fruit & Berry	G738	Tropical & Temperate Bush Fruit & Berry	86.3	0.2%
JB MDL	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G167	Northern & Central Shrub Swamp	19.4	0.0%
JB MDL	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	22.9	0.1%
JB MDL	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	19.4	0.0%
JB MDL	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	18.4	0.0%
JB MDL	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	18.2	0.0%
JB MDL	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	13.3	0.0%
JB MDL	2.C.2.Na North American Bog & Fen	G745	Eastern North American Sub-Boreal Acidic Bog & Fen	5.1	0.0%
JB MDL	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.2	0.0%
JB MDL Total				**42,182.9**	**100.0%**
JB San Antonio	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G028	Southern Plateau Dry-Mesic Hardwood Forest	237.3	0.5%
JB San Antonio	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G126	Southern Plateau Dry Forest & Woodland	18,559.1	40.2%
JB San Antonio	Developed - Combined High, Medium, Low, and Roads			7,898.1	17.1%
JB San Antonio	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	6,191.9	13.4%
JB San Antonio	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	1,268.8	2.8%
JB San Antonio	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	3.3	0.0%
JB San Antonio	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	2,956.0	6.4%
JB San Antonio	2.B.2.Nb Great Plains Grassland & Shrubland	G335	South-Central Plains & Coastal Prairie	2.7	0.0%
JB San Antonio	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	4,043.5	8.8%
JB San Antonio	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	1,665.2	3.6%
JB San Antonio	3.A.2.Na North American Warm Desert Scrub & Grassland	G099	Tamaulipan Dry Mesquite & Thornscrub	1,401.8	3.0%
JB San Antonio	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	55.3	0.1%
JB San Antonio	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	40.5	0.1%
JB San Antonio	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G784	Southeastern Great Plains Floodplain Forest	735.4	1.6%
JB San Antonio	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	602.5	1.3%
JB San Antonio	Open Water	11.A	Open Water	166.1	0.4%
JB San Antonio	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G013	Western Gulf Plain Pine-Oak Forest & Woodland	1.1	0.0%
JB San Antonio	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G017	Southeastern Great Plains Post Oak-Blackjack Oak Forest & Woodland	118.3	0.3%
JB San Antonio	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	89.4	0.2%
JB San Antonio	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	23.3	0.1%
JB San Antonio	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	14.2	0.0%
JB San Antonio	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	13.1	0.0%
JB San Antonio	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	12.6	0.0%
JB San Antonio	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	11.8	0.0%
JB San Antonio	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	7.8	0.0%
JB San Antonio	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	0.9	0.0%
JB San Antonio	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.2	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
JB San Antonio Total				46,120.3	100.0%
Keesler AFB	Developed - Combined High, Medium, Low, and Roads			1,368.2	82.8%
Keesler AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	231.3	14.0%
Keesler AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	23.7	1.4%
Keesler AFB	Open Water	11.A	Open Water	16.0	1.0%
Keesler AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G110	Atlantic & Gulf Coastal Plain Freshwater Tidal Marsh	4.4	0.3%
Keesler AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G111	Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	1.6	0.1%
Keesler AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	3.5	0.2%
Keesler AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	0.3	0.0%
Keesler AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	0.8	0.0%
Keesler AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G596	Mesic Longleaf Pine Flatwoods-Spodosol Woodland	0.6	0.0%
Keesler AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	0.3	0.0%
Keesler AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	0.8	0.1%
Keesler AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	0.2	0.0%
Keesler AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	0.5	0.0%
Keesler AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	0.0	0.0%
Keesler AFB Total				1,652.3	100.0%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	1,719.0	3.4%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	374.6	0.7%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	32.0	0.1%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	1,396.9	2.8%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	10,839.1	21.6%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G311	Intermountain Semi-Desert Grassland	4,853.3	9.7%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G312	Colorado Plateau Blackbrush-Mormon-tea Shrubland	2,783.3	5.5%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	245.1	0.5%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	365.8	0.7%
Kirtland AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G775	Intermountain Sparsely Vegetated Dune Scrub & Grassland	3.6	0.0%
Kirtland AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G225	Rocky Mountain Douglas-fir-White Fir-Blue Spruce Mesic Forest	1.3	0.0%
Kirtland AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G226	Southern Rocky Mountain White Fir-Douglas-fir Dry Forest	575.6	1.1%
Kirtland AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G228	Southern Rocky Mountain Ponderosa Pine Forest & Woodland	5,092.2	10.2%
Kirtland AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G229	Southern Rocky Mountain Ponderosa Pine Savanna	22.7	0.0%
Kirtland AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	53.8	0.1%
Kirtland AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	34.8	0.1%
Kirtland AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	1,526.1	3.0%
Kirtland AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G491	Chihuahuan Sandy Plains Semi-Desert Grassland	3,429.4	6.8%
Kirtland AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	284.9	0.6%
Kirtland AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G250	Colorado Plateau Pinyon-Juniper Woodland	2,277.0	4.5%
Kirtland AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G252	Southern Rocky Mountain Juniper Woodland & Savanna	545.8	1.1%
Kirtland AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G253	Southern Rocky Mountain Pinyon-Juniper Woodland	1,260.6	2.5%
Kirtland AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G200	Madrean Pinyon-Juniper Woodland	3,611.4	7.2%
Kirtland AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G201	Madrean Encinal	96.3	0.2%
Kirtland AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G203	Madrean Lower Montane Pine-Oak Forest & Woodland	49.6	0.1%
Kirtland AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G487	Madrean Juniper Savanna & Woodland	519.8	1.0%
Kirtland AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G281	Western Madrean Chaparral	3,737.7	7.5%
Kirtland AFB	Developed - Combined High, Medium, Low, and Roads			2,518.5	5.0%
Kirtland AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	805.4	1.6%
Kirtland AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	209.6	0.4%
Kirtland AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	516.7	1.0%
Kirtland AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	171.5	0.3%
Kirtland AFB	2.B.2.Na Western North American Grassland & Shrubland	G268	Southern Rocky Mountain Montane-Subalpine Grassland	16.1	0.0%
Kirtland AFB	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	98.6	0.2%
Kirtland AFB	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	26.9	0.1%
Kirtland AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	18.5	0.0%
Kirtland AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	11.1	0.0%
Kirtland AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	6.9	0.0%
Kirtland AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	2.7	0.0%
Kirtland AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	8.7	0.0%
Kirtland AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	7.3	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Kirtland AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	0.7	0.0%
Kirtland AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G526	Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland	0.4	0.0%
Kirtland AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	0.2	0.0%
Kirtland AFB Total				50,151.3	100.0%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G099	Tamaulipan Dry Mesquite & Thornscrub	1,597.4	34.9%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G100	Tamaulipan Dry Grassland	37.6	0.8%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G286	Chihuahuan Desert Succulent Scrub	10.3	0.2%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	43.6	1.0%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G299	Chihuahuan Desert Lowland Basin Scrub	0.1	0.0%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G489	Chihuahuan Semi-Desert Lowland Grassland	0.4	0.0%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	9.9	0.2%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	0.4	0.0%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	1.9	0.0%
Laughlin AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	3.1	0.1%
Laughlin AFB	Developed - Combined High, Medium, Low, and Roads			1,442.8	31.6%
Laughlin AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	999.3	21.9%
Laughlin AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	69.2	1.5%
Laughlin AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	0.1	0.0%
Laughlin AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	284.1	6.2%
Laughlin AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G549	Tamaulipan Wet-Mesic Scrub Forest	28.0	0.6%
Laughlin AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	25.6	0.6%
Laughlin AFB	Open Water	11.A	Open Water	9.1	0.2%
Laughlin AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G280	Eastern Madrean Chaparral	3.6	0.1%
Laughlin AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G487	Madrean Juniper Savanna & Woodland	1.6	0.0%
Laughlin AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G784	Southeastern Great Plains Floodplain Forest	1.6	0.0%
Laughlin AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	0.9	0.0%
Laughlin AFB	2.C.4.Nc Southwestern North American Warm Desert Freshwater Bosque & Marsh	G533	North American Warm Desert Riparian Low Bosque & Shrubland	0.3	0.0%
Laughlin AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	0.3	0.0%
Laughlin AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.2	0.0%
Laughlin AFB Total				4,571.5	100.0%
Little Rock AFB	Developed - Combined High, Medium, Low, and Roads			2,029.9	31.1%
Little Rock AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G012	Shortleaf Pine-Oak Forest	243.8	3.7%
Little Rock AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G159	South-Central Interior Oak Forest & Woodland	1,690.0	25.9%
Little Rock AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	876.1	13.4%
Little Rock AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	426.8	6.5%
Little Rock AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	349.5	5.4%
Little Rock AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	344.7	5.3%
Little Rock AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	263.8	4.0%
Little Rock AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	155.5	2.4%
Little Rock AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	16.9	0.3%
Little Rock AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	37.3	0.6%
Little Rock AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G130	Nonriverine Wet Oak Flatwoods	2.7	0.0%
Little Rock AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	0.2	0.0%
Little Rock AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G784	Southeastern Great Plains Floodplain Forest	0.4	0.0%
Little Rock AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	36.2	0.6%
Little Rock AFB	Open Water	11.A	Open Water	34.0	0.5%
Little Rock AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	4.6	0.1%
Little Rock AFB	6.B.1.Na Eastern North American Temperate Cliff Scree & Rock Vegetation	G106	Eastern North American Temperate Cliff	2.7	0.0%
Little Rock AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	1.6	0.0%
Little Rock AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.9	0.0%
Little Rock AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	0.2	0.0%
Little Rock AFB Total				6,517.8	100.0%
Los Angeles AFB	Developed - Combined High, Medium, Low, and Roads			188.4	85.5%
Los Angeles AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	22.5	10.2%
Los Angeles AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	3.4	1.5%
Los Angeles AFB	2.B.1.Nb California Grassland & Meadow	G497	California Ruderal Grassland & Forb Meadow	5.2	2.4%
Los Angeles AFB	2.B.1.Na Californian Scrub	G257	California Xeric Chaparral	0.6	0.3%
Los Angeles AFB	2.B.1.Na Californian Scrub	G264	Central & Southern California Coastal Sage Scrub	0.1	0.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Los Angeles AFB	2.B.1.Na Californian Scrub	G802	California Ruderal Scrub	0.0	0.0%
Los Angeles AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	0.1	0.0%
Los Angeles AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G298	Baja Semi-Desert Coastal Succulent Scrub	0.0	0.0%
Los Angeles AFB Total				220.5	100.0%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G286	Chihuahuan Desert Succulent Scrub	0.5	0.0%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	0.9	0.0%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G293	Sonoran Paloverde-Mixed Cacti Desert Scrub	9,112.2	60.6%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	2,090.1	13.9%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	1.4	0.0%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	53.8	0.4%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	19.4	0.1%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G675	North American Warm Semi-Desert Dunes & Sand Flats	0.4	0.0%
Luke AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	100.3	0.7%
Luke AFB	Developed - Combined High, Medium, Low, and Roads			1,824.9	12.1%
Luke AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,104.8	7.4%
Luke AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	122.6	0.8%
Luke AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	284.7	1.9%
Luke AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	198.8	1.3%
Luke AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	65.3	0.4%
Luke AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	0.2	0.0%
Luke AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	10.8	0.1%
Luke AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G228	Southern Rocky Mountain Ponderosa Pine Forest & Woodland	9.1	0.1%
Luke AFB	Open Water	11.A	Open Water	8.4	0.1%
Luke AFB	2.C.4.Nc Southwestern North American Warm Desert Freshwater Bosque & Marsh	G533	North American Warm Desert Riparian Low Bosque & Shrubland	5.9	0.0%
Luke AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G200	Madrean Pinyon-Juniper Woodland	0.4	0.0%
Luke AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G201	Madrean Encinal	2.4	0.0%
Luke AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G487	Madrean Juniper Savanna & Woodland	0.4	0.0%
Luke AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	2.9	0.0%
Luke AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	2.5	0.0%
Luke AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	0.1	0.0%
Luke AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G281	Western Madrean Chaparral	1.9	0.0%
Luke AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G250	Colorado Plateau Pinyon-Juniper Woodland	0.2	0.0%
Luke AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G565	Rocky Mountain Cliff Scree & Rock Vegetation	0.2	0.0%
Luke AFB	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	0.1	0.0%
Luke AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	0.0	0.0%
Luke AFB Total				15,026.0	100.0%
MacDill AFB	Developed - Combined High, Medium, Low, and Roads			2,056.2	36.1%
MacDill AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,730.6	30.4%
MacDill AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	77.9	1.4%
MacDill AFB	1.A.5.Ua Atlantic & Caribbean & East Pacific Mangrove	G004	Caribbean Fringe Mangrove	607.8	10.7%
MacDill AFB	1.A.1.Ea Caribbeo-Mesoamerican Dry Forest	G765	Caribbean Hardwood Hammock & Coastal Strand Forest	325.5	5.7%
MacDill AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G008	Sand Pine Scrub Forest & Open Woodland	3.3	0.1%
MacDill AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	1.8	0.0%
MacDill AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	249.0	4.4%
MacDill AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G596	Mesic Longleaf Pine Flatwoods-Spodosol Woodland	0.1	0.0%
MacDill AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	35.8	0.6%
MacDill AFB	Open Water	11.A	Open Water	158.9	2.8%
MacDill AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	32.0	0.6%
MacDill AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	3.1	0.1%
MacDill AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	115.6	2.0%
MacDill AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G176	Florida Dry Prairie	8.0	0.1%
MacDill AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G177	Florida Xeric Scrub	0.2	0.0%
MacDill AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	130.5	2.3%
MacDill AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	65.8	1.2%
MacDill AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	55.1	1.0%
MacDill AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G110	Atlantic & Gulf Coastal Plain Freshwater Tidal Marsh	16.8	0.3%
MacDill AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G188	Coastal Plain River & Basin Freshwater Marsh	3.1	0.1%
MacDill AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	16.0	0.3%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
MacDill AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	2.9	0.1%
MacDill AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	0.4	0.0%
MacDill AFB Total				5,696.7	100.0%
Malmstrom AFB	Developed - Combined High, Medium, Low, and Roads			1,499.8	45.5%
Malmstrom AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	1,185.1	36.0%
Malmstrom AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G331	Northern Great Plains Dry Mixedgrass Prairie	33.1	1.0%
Malmstrom AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	50.8	1.5%
Malmstrom AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	149.1	4.5%
Malmstrom AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	275.8	8.4%
Malmstrom AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G336	Great Plains Wet Prairie Wet Meadow & Seepage Fen	11.8	0.4%
Malmstrom AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	21.0	0.6%
Malmstrom AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	22.0	0.7%
Malmstrom AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	20.8	0.6%
Malmstrom AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	13.5	0.4%
Malmstrom AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	3.8	0.1%
Malmstrom AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G145	Northern & Central Great Plains Mesic Woodland	3.8	0.1%
Malmstrom AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	1.8	0.1%
Malmstrom AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G215	Middle Rocky Mountain Montane Douglas-fir Forest & Woodland	1.1	0.0%
Malmstrom AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G219	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest & Woodland	0.1	0.0%
Malmstrom AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G223	Northern Rocky Mountain Whitebark Pine-Subalpine Larch Woodland	0.1	0.0%
Malmstrom AFB	Open Water	11.A	Open Water	0.9	0.0%
Malmstrom AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	0.2	0.0%
Malmstrom AFB Total				3,294.6	100.0%
March ARB	Developed - Combined High, Medium, Low, and Roads			878.7	40.7%
March ARB	2.B.1.Na Californian Scrub	G257	California Xeric Chaparral	2.4	0.1%
March ARB	2.B.1.Na Californian Scrub	G264	Central & Southern California Coastal Sage Scrub	395.9	18.3%
March ARB	2.B.1.Na Californian Scrub	G802	California Ruderal Scrub	33.0	1.5%
March ARB	2.B.1.Nb California Grassland & Meadow	G496	California Native Perennial Grassland	14.9	0.7%
March ARB	2.B.1.Nb California Grassland & Meadow	G497	California Ruderal Grassland & Forb Meadow	377.0	17.4%
March ARB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	385.2	17.8%
March ARB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	3.8	0.2%
March ARB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	27.7	1.3%
March ARB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	16.4	0.8%
March ARB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	11.4	0.5%
March ARB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	2.6	0.1%
March ARB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	6.2	0.3%
March ARB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	2.8	0.1%
March ARB	Open Water	11.A	Open Water	1.8	0.1%
March ARB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G563	California Cliff Scree & Rock Vegetation	1.2	0.1%
March ARB Total				2,161.0	100.0%
Maxwell AFB	Developed - Combined High, Medium, Low, and Roads			1,611.7	61.6%
Maxwell AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	699.0	26.7%
Maxwell AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	87.9	3.4%
Maxwell AFB	Open Water	11.A	Open Water	90.9	3.5%
Maxwell AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	45.3	1.7%
Maxwell AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	19.3	0.7%
Maxwell AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	4.4	0.2%
Maxwell AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	0.6	0.0%
Maxwell AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	24.0	0.9%
Maxwell AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	21.0	0.8%
Maxwell AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	10.5	0.4%
Maxwell AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	1.9	0.1%
Maxwell AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	1.2	0.0%
Maxwell AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.4	0.0%
Maxwell AFB Total				2,618.1	100.0%
McConnell AFB	Developed - Combined High, Medium, Low, and Roads			1,585.5	58.9%
McConnell AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	524.8	19.5%
McConnell AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	133.0	4.9%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
McConnell AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	0.1	0.0%
McConnell AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	289.1	10.7%
McConnell AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G333	Central Great Plains Tallgrass Prairie	0.1	0.0%
McConnell AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G334	Southern Great Plains Tallgrass Prairie	31.8	1.2%
McConnell AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	18.4	0.7%
McConnell AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	34.5	1.3%
McConnell AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	31.0	1.2%
McConnell AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	28.0	1.0%
McConnell AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	1.0	0.0%
McConnell AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G329	Northern & Central Great Plains Oak Woodland	3.9	0.1%
McConnell AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	3.9	0.1%
McConnell AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	3.6	0.1%
McConnell AFB	Open Water	11.A	Open Water	0.9	0.0%
McConnell AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.2	0.0%
McConnell AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	0.2	0.0%
McConnell AFB Total				**2,690.0**	**100.0%**
Melrose Range	2.B.2.Nb Great Plains Grassland & Shrubland	G068	Great plains Sand Grassland	584.8	0.8%
Melrose Range	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	1,103.1	1.6%
Melrose Range	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	926.6	1.3%
Melrose Range	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	60,874.9	87.3%
Melrose Range	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	356.9	0.5%
Melrose Range	2.B.2.Nb Great Plains Grassland & Shrubland	G192	Southern Plains Scrub Woodland & Shrubland	387.0	0.6%
Melrose Range	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	604.1	0.9%
Melrose Range	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	2,044.4	2.9%
Melrose Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G489	Chihuahuan Semi-Desert Lowland Grassland	206.4	0.3%
Melrose Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	485.2	0.7%
Melrose Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G491	Chihuahuan Sandy Plains Semi-Desert Grassland	0.2	0.0%
Melrose Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G492	Chihuahuan Gypsophilous Grassland	562.7	0.8%
Melrose Range	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	915.8	1.3%
Melrose Range	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	265.2	0.4%
Melrose Range	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	0.7	0.0%
Melrose Range	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	117.9	0.2%
Melrose Range	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	97.7	0.1%
Melrose Range	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G136	Great Plains Playa & Rainwater Basin Wetland	90.6	0.1%
Melrose Range	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	5.8	0.0%
Melrose Range	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	80.4	0.1%
Melrose Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	0.2	0.0%
Melrose Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	0.2	0.0%
Melrose Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	1.3	0.0%
Melrose Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G775	Intermountain Sparsely Vegetated Dune Scrub & Grassland	21.3	0.0%
Melrose Range	Developed - Combined High, Medium, Low, and Roads			18.3	0.0%
Melrose Range	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	12.6	0.0%
Melrose Range	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	0.2	0.0%
Melrose Range Total				**69,764.8**	**100.0%**
Minn St Paul ARS	Developed - Combined High, Medium, Low, and Roads			196.9	91.2%
Minn St Paul ARS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	16.2	7.5%
Minn St Paul ARS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	2.9	1.3%
Minn St Paul ARS Total				**216.0**	**100.0%**
Minot AFB	Developed - Combined High, Medium, Low, and Roads			1,966.8	39.6%
Minot AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G075	Northern Great Plains Tallgrass Prairie	25.5	0.5%
Minot AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	220.2	4.4%
Minot AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	17.6	0.4%
Minot AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	788.1	15.9%
Minot AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	803.9	16.2%
Minot AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	145.0	2.9%
Minot AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	448.4	9.0%
Minot AFB	Open Water	11.A	Open Water	300.0	6.0%
Minot AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G325	Great Plains Freshwater Marsh	26.5	0.5%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Minot AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G336	Great Plains Wet Prairie Wet Meadow & Seepage Fen	84.2	1.7%
Minot AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	11.8	0.2%
Minot AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G770	Midwest Wet Prairie & Wet Meadow	61.4	1.2%
Minot AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	37.5	0.8%
Minot AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	12.8	0.3%
Minot AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G566	Great Plains Badlands Vegetation	6.9	0.1%
Minot AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	6.1	0.1%
Minot AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	5.2	0.1%
Minot AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G145	Northern & Central Great Plains Mesic Woodland	0.1	0.0%
Minot AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G146	Northern Great Plains Tallgrass Aspen Parkland	0.7	0.0%
Minot AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G329	Northern & Central Great Plains Oak Woodland	1.3	0.0%
Minot AFB Total				**4,969.9**	**100.0%**
Moody AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	3,659.4	32.9%
Moody AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	1,968.9	17.7%
Moody AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	94.0	0.8%
Moody AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	159.2	1.4%
Moody AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	610.8	5.5%
Moody AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	4.9	0.0%
Moody AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	1,348.7	12.1%
Moody AFB	Developed - Combined High, Medium, Low, and Roads			1,178.8	10.6%
Moody AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	824.4	7.4%
Moody AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	95.0	0.9%
Moody AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	438.7	3.9%
Moody AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G007	Southern Mesic Beech-Magnolia-Oak Forest	0.2	0.0%
Moody AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	57.8	0.5%
Moody AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	232.0	2.1%
Moody AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	3.8	0.0%
Moody AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	186.9	1.7%
Moody AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	128.6	1.2%
Moody AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	42.3	0.4%
Moody AFB	Open Water	11.A	Open Water	36.3	0.3%
Moody AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	27.9	0.3%
Moody AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	7.8	0.1%
Moody AFB	7.A.1.3 Bush Fruit & Berry	G738	Tropical & Temperate Bush Fruit & Berry	2.7	0.0%
Moody AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	1.3	0.0%
Moody AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	0.0	0.0%
Moody AFB Total				**11,110.3**	**100.0%**
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	916.6	0.7%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	6,659.6	5.0%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	53,361.8	40.1%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	64.9	0.0%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	7,162.7	5.4%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	3,797.3	2.9%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G311	Intermountain Semi-Desert Grassland	1.8	0.0%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	120.3	0.1%
Mountain Home AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	42,370.0	31.8%
Mountain Home AFB	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	0.2	0.0%
Mountain Home AFB	2.B.2.Na Western North American Grassland & Shrubland	G272	Central Rocky Mountain Montane-Foothill Deciduous Shrubland	0.1	0.0%
Mountain Home AFB	2.B.2.Na Western North American Grassland & Shrubland	G273	Central Rocky Mountain Lower Montane Foothill & Valley Grassland	13,934.7	10.5%
Mountain Home AFB	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	231.3	0.2%
Mountain Home AFB	Developed - Combined High, Medium, Low, and Roads			2,480.2	1.9%
Mountain Home AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	752.6	0.6%
Mountain Home AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	359.7	0.3%
Mountain Home AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	517.5	0.4%
Mountain Home AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	223.3	0.2%
Mountain Home AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	4.7	0.0%
Mountain Home AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G526	Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland	48.4	0.0%
Mountain Home AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G527	Western Montane-Subalpine Riparian & Seep Shrubland	0.9	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Mountain Home AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	10.8	0.0%
Mountain Home AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	28.1	0.0%
Mountain Home AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	0.6	0.0%
Mountain Home AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	15.8	0.0%
Mountain Home AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	6.4	0.0%
Mountain Home AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G249	Intermountain Basins Curl-leaf Mountain-mahogany Scrub & Woodland	0.4	0.0%
Mountain Home AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	4.7	0.0%
Mountain Home AFB	Open Water	11.A	Open Water	1.7	0.0%
Mountain Home AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	0.9	0.0%
Mountain Home AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G565	Rocky Mountain Cliff Scree & Rock Vegetation	0.4	0.0%
Mountain Home AFB Total				133,078.3	100.0%
Nellis AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	18,381.9	66.1%
Nellis AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	646.1	2.3%
Nellis AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	521.5	1.9%
Nellis AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G675	North American Warm Semi-Desert Dunes & Sand Flats	503.9	1.8%
Nellis AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	4.2	0.0%
Nellis AFB	Developed - Combined High, Medium, Low, and Roads			3,099.3	11.1%
Nellis AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G296	Mojave Mid-Elevation Mixed Desert Scrub	2,270.5	8.2%
Nellis AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	32.1	0.1%
Nellis AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,468.0	5.3%
Nellis AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	75.2	0.3%
Nellis AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	797.5	2.9%
Nellis AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.7	0.0%
Nellis AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G226	Southern Rocky Mountain White Fir-Douglas-fir Dry Forest	0.3	0.0%
Nellis AFB	Open Water	11.A	Open Water	0.2	0.0%
Nellis AFB	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G281	Western Madrean Chaparral	0.2	0.0%
Nellis AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G247	Great Basin Pinyon-Juniper Woodland	0.2	0.0%
Nellis AFB Total				27,801.7	100.0%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G296	Mojave Mid-Elevation Mixed Desert Scrub	1,246,639.4	42.3%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	236,018.9	8.0%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	866.3	0.0%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	168,634.3	5.7%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	34,796.1	1.2%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	156,155.6	5.3%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	400,917.8	13.6%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G311	Intermountain Semi-Desert Grassland	2,077.1	0.1%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G559	Great Basin-Intermountain Shrub & Herb Wash-Arroyo	41,348.7	1.4%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	26,481.2	0.9%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	72,134.4	2.4%
Nevada Test and Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G775	Intermountain Sparsely Vegetated Dune Scrub & Grassland	1.1	0.0%
Nevada Test and Training Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	184,251.9	6.2%
Nevada Test and Training Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	38.6	0.0%
Nevada Test and Training Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	93,967.3	3.2%
Nevada Test and Training Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G569	North American Warm Semi-Desert Cliff Scree & Pavement Sparse Vegetation	23,220.2	0.8%
Nevada Test and Training Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G675	North American Warm Semi-Desert Dunes & Sand Flats	2,399.2	0.1%
Nevada Test and Training Range	3.A.2.Na North American Warm Desert Scrub & Grassland	G677	North American Warm Desert Ruderal Scrub & Grassland	898.1	0.0%
Nevada Test and Training Range	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	588.0	0.0%
Nevada Test and Training Range	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G247	Great Basin Pinyon-Juniper Woodland	134,831.9	4.6%
Nevada Test and Training Range	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G249	Intermountain Basins Curl-leaf Mountain-mahogany Scrub & Woodland	62.3	0.0%
Nevada Test and Training Range	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	165.8	0.0%
Nevada Test and Training Range	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	115,330.7	3.9%
Nevada Test and Training Range	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G281	Western Madrean Chaparral	353.3	0.0%
Nevada Test and Training Range	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G282	Western North American Montane Sclerophyll Scrub	2,176.5	0.1%
Nevada Test and Training Range	Developed - Combined High, Medium, Low, and Roads			2,389.4	0.1%
Nevada Test and Training Range	2.B.2.Na Western North American Grassland & Shrubland	G268	Southern Rocky Mountain Montane-Subalpine Grassland	84.7	0.0%
Nevada Test and Training Range	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	15.8	0.0%
Nevada Test and Training Range	2.B.2.Na Western North American Grassland & Shrubland	G273	Central Rocky Mountain Lower Montane Foothill & Valley Grassland	543.1	0.0%
Nevada Test and Training Range	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	752.7	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Nevada Test and Training Range	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	2.7	0.0%
Nevada Test and Training Range	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	672.7	0.0%
Nevada Test and Training Range	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	599.4	0.0%
Nevada Test and Training Range	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	51.1	0.0%
Nevada Test and Training Range	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	304.5	0.0%
Nevada Test and Training Range	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	6.0	0.0%
Nevada Test and Training Range	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	132.8	0.0%
Nevada Test and Training Range	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	122.1	0.0%
Nevada Test and Training Range	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G219	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest & Woodland	22.2	0.0%
Nevada Test and Training Range	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G222	Rocky Mountain Subalpine-Montane Aspen Forest & Woodland	10.2	0.0%
Nevada Test and Training Range	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G224	Intermountain Basins Subalpine Limber Pine-Bristlecone Pine Woodland	2.4	0.0%
Nevada Test and Training Range	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G226	Southern Rocky Mountain White Fir-Douglas-fir Dry Forest	53.2	0.0%
Nevada Test and Training Range	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G228	Southern Rocky Mountain Ponderosa Pine Forest & Woodland	22.5	0.0%
Nevada Test and Training Range	1.B.3.Nc Rocky Mountain & Great Basin Montane Flooded & Swamp Forest	G506	Rocky Mountain & Great Basin Montane Riparian Forest	97.0	0.0%
Nevada Test and Training Range	1.B.3.Nc Rocky Mountain & Great Basin Montane Flooded & Swamp Forest	G796	Northern Rocky Mountain Lowland & Foothill Riparian Forest	10.0	0.0%
Nevada Test and Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	0.4	0.0%
Nevada Test and Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	66.5	0.0%
Nevada Test and Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G526	Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland	5.1	0.0%
Nevada Test and Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G527	Western Montane-Subalpine Riparian & Seep Shrubland	0.4	0.0%
Nevada Test and Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	1.6	0.0%
Nevada Test and Training Range	Open Water	11.A	Open Water	49.1	0.0%
Nevada Test and Training Range	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	9.6	0.0%
Nevada Test and Training Range	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G202	Madrean Upper Montane Conifer-Oak Forest & Woodland	3.8	0.0%
Nevada Test and Training Range	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.7	0.0%
Nevada Test and Training Range	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G565	Rocky Mountain Cliff Scree & Rock Vegetation	0.4	0.0%
Nevada Test and Training Range	2.C.4.Nc Southwestern North American Warm Desert Freshwater Bosque & Marsh	G533	North American Warm Desert Riparian Low Bosque & Shrubland	0.2	0.0%
Nevada Test and Training Range Total				**2,950,387.1**	**100.0%**
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G025	Laurentian & Acadian Pine-Oak Forest & Woodland	188.3	6.5%
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	39.6	1.4%
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	24.6	0.9%
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G650	Northeastern Oak-Hickory Forest & Woodland	0.7	0.0%
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G741	Laurentian & Acadian hemlock-White Pine-Hardwood Forest	1,309.8	45.4%
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G742	Appalachian & Allegheny Northern Hardwood-Conifer Forest	707.9	24.5%
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G743	Laurentian & Acadian Hardwood Forest	293.3	10.2%
New Boston SFS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G744	Northern Appalachian & Acadian Red Spruce-Fir-Hardwood Forest	0.9	0.0%
New Boston SFS	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G045	Northern Conifer & Hardwood Acidic Swamp	43.9	1.5%
New Boston SFS	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G046	Laurentian-Acadian-Allegheny Alkaline Swamp	0.4	0.0%
New Boston SFS	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G653	Silver Maple-Green Ash-Black Ash Floodplain Forest	7.2	0.2%
New Boston SFS	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	7.1	0.2%
New Boston SFS	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	54.4	1.9%
New Boston SFS	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	42.6	1.5%
New Boston SFS	Developed - Combined High, Medium, Low, and Roads			38.3	1.3%
New Boston SFS	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G125	Eastern North American Freshwater Marsh	28.2	1.0%
New Boston SFS	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G771	Laurentian & Northeast Wet Meadow	2.7	0.1%
New Boston SFS	Open Water	11.A	Open Water	30.7	1.1%
New Boston SFS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	10.1	0.3%
New Boston SFS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	15.5	0.5%
New Boston SFS	2.C.2.Na North American Bog & Fen	G183	Northeast & Midwest Prairie Alkaline Fen	1.1	0.0%
New Boston SFS	2.C.2.Na North American Bog & Fen	G185	Eastern North American Boreal Alkaline Fen	0.4	0.0%
New Boston SFS	2.C.2.Na North American Bog & Fen	G745	Eastern North American Sub-Boreal Acidic Bog & Fen	13.8	0.5%
New Boston SFS	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	11.8	0.4%
New Boston SFS	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	11.3	0.4%
New Boston SFS	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.9	0.0%
New Boston SFS	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.9	0.0%
New Boston SFS	7.A.1.3 Bush Fruit & Berry	G738	Tropical & Temperate Bush Fruit & Berry	0.2	0.0%
New Boston SFS Total				**2,886.7**	**100.0%**
Offutt AFB	Developed - Combined High, Medium, Low, and Roads			1,811.9	55.5%
Offutt AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	577.7	17.7%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Offutt AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	57.4	1.8%
Offutt AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	321.2	9.8%
Offutt AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	188.5	5.8%
Offutt AFB	Open Water	11.A	Open Water	118.6	3.6%
Offutt AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G333	Central Great Plains Tallgrass Prairie	114.3	3.5%
Offutt AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	43.4	1.3%
Offutt AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G125	Eastern North American Freshwater Marsh	0.7	0.0%
Offutt AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	5.7	0.2%
Offutt AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G770	Midwest Wet Prairie & Wet Meadow	7.7	0.2%
Offutt AFB	2.C.2.Na North American Bog & Fen	G183	Northeast & Midwest Prairie Alkaline Fen	6.5	0.2%
Offutt AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	0.1	0.0%
Offutt AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G145	Northern & Central Great Plains Mesic Woodland	0.2	0.0%
Offutt AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	5.3	0.2%
Offutt AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G552	Northern & Central Native Ruderal Flooded & Swamp Forest	0.1	0.0%
Offutt AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G652	Silver Maple-Green Ash-Sycamore Floodplain Forest	4.2	0.1%
Offutt AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	1.7	0.1%
Offutt AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.2	0.0%
Offutt AFB Total				**3,265.4**	**100.0%**
Patrick SFB	Developed - Combined High, Medium, Low, and Roads			1,344.9	49.0%
Patrick SFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	614.5	22.4%
Patrick SFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	13.4	0.5%
Patrick SFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G008	Sand Pine Scrub Forest & Open Woodland	10.7	0.4%
Patrick SFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G596	Mesic Longleaf Pine Flatwoods-Spodosol Woodland	338.7	12.3%
Patrick SFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	1.5	0.1%
Patrick SFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G176	Florida Dry Prairie	7.5	0.3%
Patrick SFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G177	Florida Xeric Scrub	38.0	1.4%
Patrick SFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	172.6	6.3%
Patrick SFB	Open Water	11.A	Open Water	130.1	4.7%
Patrick SFB	1.A.1.Ea Caribbeo-Mesoamerican Dry Forest	G765	Caribbean Hardwood Hammock & Coastal Strand Forest	34.1	1.2%
Patrick SFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	12.3	0.4%
Patrick SFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G123	Atlantic & Gulf Coast Saline Flat & Panne	5.1	0.2%
Patrick SFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G188	Coastal Plain River & Basin Freshwater Marsh	6.1	0.2%
Patrick SFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G777	Atlantic & Gulf Coastal Interdunal Marsh & Prairie	5.9	0.2%
Patrick SFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	0.1	0.0%
Patrick SFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	0.7	0.0%
Patrick SFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	4.2	0.2%
Patrick SFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G762	Southeastern Exotic Ruderal Flooded & Swamp Forest	0.7	0.0%
Patrick SFB	2.A.3.Ee Caribbeo-Mesoamerican Dine & Coastal Grassland & Shrubland	G127	Caribbean Coastal Beach & Dune Vegetation	1.0	0.0%
Patrick SFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G557	Southeastern Ruderal Wet Meadow & Marsh	0.4	0.0%
Patrick SFB Total				**2,742.8**	**100.0%**
Peterson AFB	Developed - Combined High, Medium, Low, and Roads			795.3	38.0%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G068	Great plains Sand Grassland	5.8	0.3%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	3.0	0.1%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	36.3	1.7%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	14.7	0.7%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	513.7	24.6%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	0.6	0.0%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G679	Northern & Central Great Plains Ruderal Grassland & Shrubland	0.4	0.0%
Peterson AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	129.4	6.2%
Peterson AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	193.3	9.2%
Peterson AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	59.7	2.9%
Peterson AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	130.9	6.3%
Peterson AFB	2.B.1.Na Californian Scrub	G258	California Maritime Chaparral	2.4	0.1%
Peterson AFB	2.B.1.Na Californian Scrub	G264	Central & Southern California Coastal Sage Scrub	50.8	2.4%
Peterson AFB	2.B.1.Na Californian Scrub	G802	California Ruderal Scrub	3.0	0.1%
Peterson AFB	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	25.8	1.2%
Peterson AFB	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	2.9	0.1%
Peterson AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	1.1	0.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Peterson AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G293	Sonoran Paloverde-Mixed Cacti Desert Scrub	5.7	0.3%
Peterson AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G295	Mojave-Sonoran Bajada & Valley Desert Scrub	14.0	0.7%
Peterson AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G489	Chihuahuan Semi-Desert Lowland Grassland	0.2	0.0%
Peterson AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G492	Chihuahuan Gypsophilous Grassland	0.2	0.0%
Peterson AFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G541	Warm Semi-Desert Shrub & Herb Dry Wash & Colluvial Slope	0.1	0.0%
Peterson AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	14.9	0.7%
Peterson AFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	3.8	0.2%
Peterson AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	18.2	0.9%
Peterson AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	14.2	0.7%
Peterson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	1.5	0.1%
Peterson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	8.7	0.4%
Peterson AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	9.4	0.5%
Peterson AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	7.1	0.3%
Peterson AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G013	Western Gulf Plain Pine-Oak Forest & Woodland	5.9	0.3%
Peterson AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	4.7	0.2%
Peterson AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	3.5	0.2%
Peterson AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	2.4	0.1%
Peterson AFB	Open Water	11.A	Open Water	2.0	0.1%
Peterson AFB	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	1.9	0.1%
Peterson AFB	2.B.1.Nb California Grassland & Meadow	G496	California Native Perennial Grassland	0.0	0.0%
Peterson AFB	2.B.1.Nb California Grassland & Meadow	G497	California Ruderal Grassland & Forb Meadow	1.4	0.1%
Peterson AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G228	Southern Rocky Mountain Ponderosa Pine Forest & Woodland	1.1	0.1%
Peterson AFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G229	Southern Rocky Mountain Ponderosa Pine Savanna	0.2	0.0%
Peterson AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	0.4	0.0%
Peterson AFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G253	Southern Rocky Mountain Pinyon-Juniper Woodland	0.2	0.0%
Peterson AFB	1.B.1.Nc Californian Warm Temperate Forest	G198	California Conifer Forest & Woodland	0.0	0.0%
Peterson AFB Total				**2,090.8**	**100.0%**
Pillar Point AFS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	3.4	5.3%
Pillar Point AFS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	39.4	62.2%
Pillar Point AFS				6.0	9.5%
Pillar Point AFS	2.B.1.Na Californian Scrub	G257	California Xeric Chaparral	0.2	0.4%
Pillar Point AFS	2.B.1.Na Californian Scrub	G662	California North Coastal & Mesic Scrub	5.1	8.1%
Pillar Point AFS	2.B.4.Nb Pacific North American Coast Scrub & Herb Vegetation	G498	North Pacific Maritime Coastal Scrub & Herb Beach & Dune	2.6	4.1%
Pillar Point AFS	2.B.4.Nb Pacific North American Coast Scrub & Herb Vegetation	G663	California Coastal Beach & Dune Scrub	1.6	2.6%
Pillar Point AFS	1.B.2.Nd Vancouverian Cool Temperate Forest	G235	California Coastal Redwood Forest	0.3	0.5%
Pillar Point AFS	1.B.2.Nd Vancouverian Cool Temperate Forest	G344	Californian Montane Conifer Forest & Woodland	1.1	1.8%
Pillar Point AFS	1.B.3.Ng Vancouverian Flooded & Swamp Forest	G254	North Pacific Lowland Riparian Forest & Woodland	1.0	1.5%
Pillar Point AFS	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G517	Vancouverian Freshwater Wet Meadow & Marsh	0.8	1.2%
Pillar Point AFS	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	0.1	0.2%
Pillar Point AFS	2.B.1.Nb California Grassland & Meadow	G497	California Ruderal Grassland & Forb Meadow	0.8	1.2%
Pillar Point AFS	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G563	California Cliff Scree & Rock Vegetation	0.4	0.7%
Pillar Point AFS	2.C.5.Nc Temperate & Boreal Pacific Coastal Salt Marsh	G499	Temperate Pacific Tidal Salt & Brackish Marsh	0.4	0.7%
Pillar Point AFS	Open Water	11.A	Open Water	0.1	0.1%
Pillar Point AFS Total				**63.4**	**100.0%**
Pittsburg ARS	Developed - Combined High, Medium, Low, and Roads			121.4	88.7%
Pittsburg ARS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	13.5	9.8%
Pittsburg ARS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	2.0	1.5%
Pittsburg ARS Total				**136.9**	**100.0%**
Poinsett ECR	2.C.2.Nb Southeastern North American Coastal Bog & Fen	G186	Southeastern Coastal Plain Pocosin & Shrub Bog	4,053.0	32.4%
Poinsett ECR	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	26.5	0.2%
Poinsett ECR	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	995.9	8.0%
Poinsett ECR	1.B.1.Na Southeastern North American Warm Temperate Forest	G154	Xeric Longleaf Pine Woodland	2,595.4	20.7%
Poinsett ECR	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	0.9	0.0%
Poinsett ECR	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	12.9	0.1%
Poinsett ECR	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	2,663.3	21.3%
Poinsett ECR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	801.5	6.4%
Poinsett ECR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	129.6	1.0%
Poinsett ECR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	5.1	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Poinsett ECR	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	2.2	0.0%
Poinsett ECR	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	455.2	3.6%
Poinsett ECR	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	286.1	2.3%
Poinsett ECR	Developed - Combined High, Medium, Low, and Roads			198.9	1.6%
Poinsett ECR	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	158.1	1.3%
Poinsett ECR	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	31.3	0.2%
Poinsett ECR	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	53.8	0.4%
Poinsett ECR	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	32.1	0.3%
Poinsett ECR	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	18.1	0.1%
Poinsett ECR	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G165	Piedmont & Central Atlantic Coastal Plain Oak Forest	4.4	0.0%
Poinsett ECR	Open Water	11.A	Open Water	0.9	0.0%
Poinsett ECR	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.9	0.0%
Poinsett ECR Total				**12,525.9**	**100.0%**
Robins AFB	Developed - Combined High, Medium, Low, and Roads			2,748.4	41.0%
Robins AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	1,979.0	29.5%
Robins AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	139.3	2.1%
Robins AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	0.7	0.0%
Robins AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	921.3	13.8%
Robins AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	126.9	1.9%
Robins AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G007	Southern Mesic Beech-Magnolia-Oak Forest	1.1	0.0%
Robins AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	51.6	0.8%
Robins AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G029	Southeastern Exotic Ruderal Forest	3.6	0.1%
Robins AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	370.4	5.5%
Robins AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	1.3	0.0%
Robins AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	111.3	1.7%
Robins AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	84.0	1.3%
Robins AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	45.3	0.7%
Robins AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	42.0	0.6%
Robins AFB	Open Water	11.A	Open Water	41.0	0.6%
Robins AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	26.9	0.4%
Robins AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	3.1	0.0%
Robins AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	1.6	0.0%
Robins AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.9	0.0%
Robins AFB Total				**6,699.8**	**100.0%**
Schriever SFB	2.B.2.Nb Great Plains Grassland & Shrubland	G068	Great plains Sand Grassland	53.8	1.4%
Schriever SFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	2.2	0.1%
Schriever SFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	29.6	0.8%
Schriever SFB	2.B.2.Nb Great Plains Grassland & Shrubland	G141	Northern Great Plains Mixedgrass Prairie	82.8	2.2%
Schriever SFB	2.B.2.Nb Great Plains Grassland & Shrubland	G144	Great Plains Shortgrass Prairie	3,094.3	80.9%
Schriever SFB	Developed - Combined High, Medium, Low, and Roads			263.7	6.9%
Schriever SFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	120.1	3.1%
Schriever SFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	8.2	0.2%
Schriever SFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	93.5	2.4%
Schriever SFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G136	Great Plains Playa & Rainwater Basin Wetland	33.4	0.9%
Schriever SFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	1.1	0.0%
Schriever SFB	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	23.1	0.6%
Schriever SFB	2.B.2.Na Western North American Grassland & Shrubland	G277	Southern Rocky Mountain Gambel Oak-Mixed Montane Shrubland	0.9	0.0%
Schriever SFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	12.1	0.3%
Schriever SFB	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	3.3	0.1%
Schriever SFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G288	Chihuahuan Creosotebush-Mixed Desert Scrub	1.6	0.0%
Schriever SFB	3.A.2.Na North American Warm Desert Scrub & Grassland	G490	Chihuahuan Desert Foothill-Piedmont & Lower Montane Grassland	0.6	0.0%
Schriever SFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G228	Southern Rocky Mountain Ponderosa Pine Forest & Woodland	0.7	0.0%
Schriever SFB	1.B.2.Nb Rocky Mountain Cool Temperate Forest	G229	Southern Rocky Mountain Ponderosa Pine Savanna	0.7	0.0%
Schriever SFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	0.7	0.0%
Schriever SFB	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G253	Southern Rocky Mountain Pinyon-Juniper Woodland	0.2	0.0%
Schriever SFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.2	0.0%
Schriever SFB Total				**3,826.9**	**100.0%**
Scott AFB	Developed - Combined High, Medium, Low, and Roads			1,781.3	60.7%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Scott AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	566.8	19.3%
Scott AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	58.8	2.0%
Scott AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G597	North-Central Flatwoods & Swamp Forest	46.3	1.6%
Scott AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G652	Silver Maple-Green Ash-Sycamore Floodplain Forest	7.4	0.3%
Scott AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	299.2	10.2%
Scott AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	55.1	1.9%
Scott AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	6.6	0.2%
Scott AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G159	South-Central Interior Oak Forest & Woodland	33.9	1.2%
Scott AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	1.1	0.0%
Scott AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	40.7	1.4%
Scott AFB	Open Water	11.A	Open Water	15.8	0.5%
Scott AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G167	Northern & Central Shrub Swamp	0.7	0.0%
Scott AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G770	Midwest Wet Prairie & Wet Meadow	6.7	0.2%
Scott AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G773	Eastern Inland Saline Marsh	8.1	0.3%
Scott AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	8.2	0.3%
Scott AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.0	0.0%
Scott AFB Total				**2,936.8**	**100.0%**
Seymour Johnson AFB	Developed - Combined High, Medium, Low, and Roads			1,548.2	47.2%
Seymour Johnson AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,092.5	33.3%
Seymour Johnson AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	94.0	2.9%
Seymour Johnson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	58.2	1.8%
Seymour Johnson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	181.1	5.5%
Seymour Johnson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G154	Xeric Longleaf Pine Woodland	0.2	0.0%
Seymour Johnson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	12.8	0.4%
Seymour Johnson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	1.8	0.1%
Seymour Johnson AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G798	Coastal Live Oak-Hickory-Palmetto Forest	2.1	0.1%
Seymour Johnson AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	104.5	3.2%
Seymour Johnson AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	2.7	0.1%
Seymour Johnson AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	0.9	0.0%
Seymour Johnson AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	3.6	0.1%
Seymour Johnson AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	87.1	2.7%
Seymour Johnson AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	38.3	1.2%
Seymour Johnson AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	15.1	0.5%
Seymour Johnson AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	12.5	0.4%
Seymour Johnson AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	6.4	0.2%
Seymour Johnson AFB	Open Water	11.A	Open Water	5.0	0.2%
Seymour Johnson AFB	2.C.2.Nb Southeastern North American Coastal Bog & Fen	G186	Southeastern Coastal Plain Pocosin & Shrub Bog	3.7	0.1%
Seymour Johnson AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G165	Piedmont & Central Atlantic Coastal Plain Oak Forest	3.6	0.1%
Seymour Johnson AFB	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G494	South Atlantic & Gulf Shrub & Grass Coast & Dune	2.2	0.1%
Seymour Johnson AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.4	0.0%
Seymour Johnson AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	0.2	0.0%
Seymour Johnson AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G122	Atlantic & Gulf Coast Low Salt Marsh	0.0	0.0%
Seymour Johnson AFB Total				**3,277.3**	**100.0%**
Shaw AFB	Developed - Combined High, Medium, Low, and Roads			1,683.8	47.1%
Shaw AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,115.6	31.2%
Shaw AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	174.0	4.9%
Shaw AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	151.2	4.2%
Shaw AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G009	Dry-Mesic Loamy Longleaf Pine Woodland	1.8	0.0%
Shaw AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	56.9	1.6%
Shaw AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G154	Xeric Longleaf Pine Woodland	83.9	2.3%
Shaw AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G166	Southern Mesic Beech-Oak-Mixed Deciduous Forest	5.0	0.1%
Shaw AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	86.2	2.4%
Shaw AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	60.1	1.7%
Shaw AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	51.7	1.4%
Shaw AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	32.9	0.9%
Shaw AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	11.9	0.3%
Shaw AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	0.4	0.0%
Shaw AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G553	Southeastern Native Ruderal Flooded & Swamp Forest	2.0	0.1%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Shaw AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	24.1	0.7%
Shaw AFB	Open Water	11.A	Open Water	15.6	0.4%
Shaw AFB	2.C.2.Nb Southeastern North American Coastal Bog & Fen	G186	Southeastern Coastal Plain Pocosin & Shrub Bog	10.5	0.3%
Shaw AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	8.0	0.2%
Shaw AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.7	0.0%
Shaw AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G020	Appalachian & Interior Mesic Forest	0.2	0.0%
Shaw AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G165	Piedmont & Central Atlantic Coastal Plain Oak Forest	0.2	0.0%
Shaw AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G601	Chinkapin Oak-Shumard Oak-Blue Ash Alkaline Forest	0.1	0.0%
Shaw AFB Total				**3,576.8**	**100.0%**
Sheppard AFB	Developed - Combined High, Medium, Low, and Roads			2,037.3	44.2%
Sheppard AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,262.1	27.4%
Sheppard AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	45.4	1.0%
Sheppard AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	12.4	0.3%
Sheppard AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	32.5	0.7%
Sheppard AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	36.5	0.8%
Sheppard AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	1,091.6	23.7%
Sheppard AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	60.1	1.3%
Sheppard AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	20.3	0.4%
Sheppard AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	8.1	0.2%
Sheppard AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G017	Southeastern Great Plains Post Oak-Blackjack Oak Forest & Woodland	4.0	0.1%
Sheppard AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	1.8	0.0%
Sheppard AFB	1.B.1.Nd Madrean & Southwest Great Plains Warm Temperate Woodland & Scrub	G126	Southern Plateau Dry Forest & Woodland	0.7	0.0%
Sheppard AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	0.4	0.0%
Sheppard AFB Total				**4,613.3**	**100.0%**
Tinker AFB	Developed - Combined High, Medium, Low, and Roads			3,201.7	64.1%
Tinker AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,030.0	20.6%
Tinker AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	255.6	5.1%
Tinker AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G069	Great Plains Sand Shrubland	1.2	0.0%
Tinker AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	29.9	0.6%
Tinker AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	1.2	0.0%
Tinker AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G192	Southern Plains Scrub Woodland & Shrubland	0.4	0.0%
Tinker AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G334	Southern Great Plains Tallgrass Prairie	291.9	5.8%
Tinker AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	46.9	0.9%
Tinker AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G017	Southeastern Great Plains Post Oak-Blackjack Oak Forest & Woodland	85.4	1.7%
Tinker AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G784	Southeastern Great Plains Floodplain Forest	13.5	0.3%
Tinker AFB	Open Water	11.A	Open Water	9.8	0.2%
Tinker AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	7.6	0.2%
Tinker AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	6.1	0.1%
Tinker AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	4.9	0.1%
Tinker AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	4.2	0.1%
Tinker AFB	6.B.1.Nc Great Plains Cliff Scree & Rock Vegetation	G567	Great Plains Cliff Scree & Rock Vegetation	1.8	0.0%
Tinker AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	1.1	0.0%
Tinker AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	0.4	0.0%
Tinker AFB Total				**4,993.6**	**100.0%**
Travis AFB	Developed - Combined High, Medium, Low, and Roads			2,224.0	44.4%
Travis AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G517	Vancouverian Freshwater Wet Meadow & Marsh	138.9	2.8%
Travis AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	632.5	12.6%
Travis AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	284.7	5.7%
Travis AFB	2.B.1.Nb California Grassland & Meadow	G496	California Native Perennial Grassland	56.5	1.1%
Travis AFB	2.B.1.Nb California Grassland & Meadow	G497	California Ruderal Grassland & Forb Meadow	996.1	19.9%
Travis AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	585.1	11.7%
Travis AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	19.2	0.4%
Travis AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	24.7	0.5%
Travis AFB	2.B.1.Na Californian Scrub	G257	California Xeric Chaparral	5.5	0.1%
Travis AFB	2.B.1.Na Californian Scrub	G662	California North Coastal & Mesic Scrub	1.3	0.0%
Travis AFB	2.B.1.Na Californian Scrub	G782	California Coastal & Foothill Seral Scrub	8.5	0.2%
Travis AFB	2.B.1.Na Californian Scrub	G802	California Ruderal Scrub	1.1	0.0%
Travis AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	11.9	0.2%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Travis AFB	2.B.4.Nb Pacific North American Coast Scrub & Herb Vegetation	G663	California Coastal Beach & Dune Scrub	8.1	0.2%
Travis AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	5.3	0.1%
Travis AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G563	California Cliff Scree & Rock Vegetation	4.3	0.1%
Travis AFB	1.B.1.Nc Californian Warm Temperate Forest	G195	California Broadleaf Forest & Woodland	0.7	0.0%
Travis AFB	1.B.1.Nc Californian Warm Temperate Forest	G678	California Ruderal Forest	0.4	0.0%
Travis AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	0.0	0.0%
Travis AFB Total				5,008.8	100.0%
Tyndall AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G007	Southern Mesic Beech-Magnolia-Oak Forest	5.3	0.0%
Tyndall AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G031	Southeastern Native Ruderal Forest	12.3	0.0%
Tyndall AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G154	Xeric Longleaf Pine Woodland	197.9	0.7%
Tyndall AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G190	Wet-Mesic Longleaf Pine Woodland	5,712.3	20.4%
Tyndall AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G596	Mesic Longleaf Pine Flatwoods-Spodosol Woodland	7,570.1	27.1%
Tyndall AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G790	Southern Evergreen Oak Forest	713.1	2.6%
Tyndall AFB	1.B.1.Na Southeastern North American Warm Temperate Forest	G798	Coastal Live Oak-Hickory-Palmetto Forest	207.5	0.7%
Tyndall AFB	Developed - Combined High, Medium, Low, and Roads			4,112.3	14.7%
Tyndall AFB	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G494	South Atlantic & Gulf Shrub & Grass Coast & Dune	2,039.3	7.3%
Tyndall AFB	2.B.4.Na Eastern North American Coast Scrub & Herb vegetation	G661	South Atlantic & Gulf Coastal Beach	503.7	1.8%
Tyndall AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,481.6	5.3%
Tyndall AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	971.6	3.5%
Tyndall AFB	2.B.2.Ne Southeastern North American Grassland & Shrubland	G583	Southeastern Ruderal Grassland & Shrubland	1,510.8	5.4%
Tyndall AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G120	Atlantic & Gulf Coast Brackish Tidal Marsh	0.7	0.0%
Tyndall AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G121	Atlantic & Gulf Coast High Salt Marsh	798.5	2.9%
Tyndall AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G122	Atlantic & Gulf Coast Low Salt Marsh	3.4	0.0%
Tyndall AFB	2.C.5.Nb Temperate & Boreal Atlantic Coastal Salt Marsh	G123	Atlantic & Gulf Coast Saline Flat & Panne	5.5	0.0%
Tyndall AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G110	Atlantic & Gulf Coastal Plain Freshwater Tidal Marsh	179.2	0.6%
Tyndall AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G111	Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	449.4	1.6%
Tyndall AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G188	Coastal Plain River & Basin Freshwater Marsh	0.7	0.0%
Tyndall AFB	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G777	Atlantic & Gulf Coastal Interdunal Marsh & Prairie	39.3	0.1%
Tyndall AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G033	Bald-cypress-Tupelo Floodplain Forest	7.8	0.0%
Tyndall AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G034	Oak-Sweetgum Floodplain Forest	146.1	0.5%
Tyndall AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G036	Pond-cypress Basin Swamp	23.9	0.1%
Tyndall AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G037	Coastal Plain Mixed Evergreen Swamp	373.2	1.3%
Tyndall AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G038	Coastal Plain Hardwood Basin Swamp	5.6	0.0%
Tyndall AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G130	Nonriverine Wet Oak Flatwoods	0.4	0.0%
Tyndall AFB	Open Water	11.A	Open Water	481.5	1.7%
Tyndall AFB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	153.2	0.5%
Tyndall AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	134.1	0.5%
Tyndall AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	68.5	0.2%
Tyndall AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	16.8	0.1%
Tyndall AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	8.2	0.0%
Tyndall AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	5.6	0.0%
Tyndall AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	4.2	0.0%
Tyndall AFB Total				27,943.5	100.0%
Utah Test Training Range	2.C.5.Nd North American Western Interior Brackish Marsh	G537	North American Desert Alkaline-Saline Shrub Wetland	18.7	0.0%
Utah Test Training Range	2.C.5.Nd North American Western Interior Brackish Marsh	G538	North American Desert Alkaline-Saline Herbaceous Wetland & Playa	1,180,486.7	82.7%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G300	Intermountain Shadscale-Saltbush Scrub	36,660.4	2.6%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G302	Intermountain Mesic Tall Sagebrush Shrubland & Steppe	8.0	0.0%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G303	Intermountain Dry Tall Sagebrush Shrubland	10,425.1	0.7%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G304	Intermountain Mountain Big Sagebrush Shrubland & Steppe	115.0	0.0%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G308	Intermountain Low & Black Sagebrush Shrubland & Steppe	6,702.0	0.5%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G310	Intermountain Semi-Desert Shrubland & Steppe	8,024.0	0.6%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G311	Intermountain Semi-Desert Grassland	230.6	0.0%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G559	Great Basin-Intermountain Shrub & Herb Wash-Arroyo	17,665.2	1.2%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G570	Intermountain Basins Cliff Scree & Badland Sparse Vegetation	1,360.6	0.1%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G600	Great Basin & Intermountain Ruderal Dry Shrubland & Grassland	46,263.7	3.2%
Utah Test Training Range	3.B.1.Ne Western North American Cool Semi-Desert Scrub & Grassland	G775	Intermountain Sparsely Vegetated Dune Scrub & Grassland	66,427.0	4.7%
Utah Test Training Range	Open Water	11.A	Open Water	24,254.6	1.7%
Utah Test Training Range	2.B.2.Na Western North American Grassland & Shrubland	G273	Central Rocky Mountain Lower Montane Foothill & Valley Grassland	288.6	0.0%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Utah Test Training Range	2.B.2.Na Western North American Grassland & Shrubland	G276	Southern Rocky Mountain Mountain-mahogany-Mixed Foothill Shrubland	28.9	0.0%
Utah Test Training Range	2.B.2.Na Western North American Grassland & Shrubland	G624	Interior Western North American Ruderal Grassland & Shrubland	22,040.2	1.5%
Utah Test Training Range	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G510	Interior West Ruderal Riparian Forest & Scrub	5,332.8	0.4%
Utah Test Training Range	Developed - Combined High, Medium, Low, and Roads			926.8	0.1%
Utah Test Training Range	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	363.2	0.0%
Utah Test Training Range	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	197.3	0.0%
Utah Test Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	2.0	0.0%
Utah Test Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G526	Rocky Mountain & Great Basin Lowland & Foothill Riparian Shrubland	0.4	0.0%
Utah Test Training Range	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G531	Arid West Interior Freshwater Emergent Marsh	117.8	0.0%
Utah Test Training Range	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	52.4	0.0%
Utah Test Training Range	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	38.2	0.0%
Utah Test Training Range	2.B.2.Nd Western North American Interior Sclerophyllous Chaparral	G282	Western North American Montane Sclerophyll Scrub	27.9	0.0%
Utah Test Training Range	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G246	Colorado Plateau-Great Basin Juniper Woodland & Savanna	8.5	0.0%
Utah Test Training Range	1.B.2.Nc Western North American Cool Temperate Woodland & Scrub	G247	Great Basin Pinyon-Juniper Woodland	0.7	0.0%
Utah Test Training Range	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	2.4	0.0%
Utah Test Training Range	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.7	0.0%
Utah Test Training Range	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	0.7	0.0%
Utah Test Training Range	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.2	0.0%
Utah Test Training Range Total				**1,428,071.0**	**100.0%**
Vance AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,019.3	32.0%
Vance AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	206.2	6.5%
Vance AFB	Developed - Combined High, Medium, Low, and Roads			938.3	29.4%
Vance AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G133	Central Great Plains Mixedgrass Prairie	283.4	8.9%
Vance AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G191	Southern Plains Oak-Juniper Scrub Woodland & Shrubland	1.0	0.0%
Vance AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G192	Southern Plains Scrub Woodland & Shrubland	4.3	0.1%
Vance AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G334	Southern Great Plains Tallgrass Prairie	223.5	7.0%
Vance AFB	2.B.2.Nb Great Plains Grassland & Shrubland	G680	Southern Plains & Texas Ruderal & Planted Grassland & Shrubland	190.2	6.0%
Vance AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G017	Southeastern Great Plains Post Oak-Blackjack Oak Forest & Woodland	200.5	6.3%
Vance AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G147	Northern & Central Great Plains Floodplain Forest	46.5	1.5%
Vance AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	45.5	1.4%
Vance AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G337	Great Plains Shrub & Herb Riparian	19.7	0.6%
Vance AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	4.6	0.1%
Vance AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	3.8	0.1%
Vance AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.8	0.0%
Vance AFB Total				**3,187.8**	**100.0%**
Vandenberg AFB	2.B.1.Na Californian Scrub	G257	California Xeric Chaparral	13,066.1	13.1%
Vandenberg AFB	2.B.1.Na Californian Scrub	G261	California Mesic & Pre-montane Chaparral	108.6	0.1%
Vandenberg AFB	2.B.1.Na Californian Scrub	G264	Central & Southern California Coastal Sage Scrub	29,804.7	29.9%
Vandenberg AFB	2.B.1.Na Californian Scrub	G662	California North Coastal & Mesic Scrub	15.8	0.0%
Vandenberg AFB	2.B.1.Na Californian Scrub	G802	California Ruderal Scrub	159.4	0.2%
Vandenberg AFB	2.B.1.Nb California Grassland & Meadow	G496	California Native Perennial Grassland	5,282.3	5.3%
Vandenberg AFB	2.B.1.Nb California Grassland & Meadow	G497	California Ruderal Grassland & Forb Meadow	7,525.3	7.6%
Vandenberg AFB	2.B.4.Nb Pacific North American Coast Scrub & Herb Vegetation	G498	North Pacific Maritime Coastal Scrub & Herb Beach & Dune	9,780.1	9.8%
Vandenberg AFB	2.B.4.Nb Pacific North American Coast Scrub & Herb Vegetation	G663	California Coastal Beach & Dune Scrub	1,920.7	1.9%
Vandenberg AFB	1.B.1.Nc Californian Warm Temperate Forest	G195	California Broadleaf Forest & Woodland	8,507.9	8.5%
Vandenberg AFB	1.B.1.Nc Californian Warm Temperate Forest	G198	California Conifer Forest & Woodland	20.2	0.0%
Vandenberg AFB	1.B.1.Nc Californian Warm Temperate Forest	G678	California Ruderal Forest	21.1	0.0%
Vandenberg AFB	Developed - Combined High, Medium, Low, and Roads			7,407.3	7.4%
Vandenberg AFB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	5,042.1	5.1%
Vandenberg AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	3,186.1	3.2%
Vandenberg AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	1,076.1	1.1%
Vandenberg AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G517	Vancouverian Freshwater Wet Meadow & Marsh	103.2	0.1%
Vandenberg AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G521	Vancouverian & Rocky Mountain Montane Wet Meadow & Marsh	256.0	0.3%
Vandenberg AFB	2.C.4.Nb Western North American Freshwater Shrubland Wet Meadow & Marsh	G524	Western North American Ruderal Wet Shrubland Meadow & Marsh	2,902.9	2.9%
Vandenberg AFB	1.B.3.Nd Interior Lowland West Flooded & Swamp Forest	G797	Warm Southwest Riparian Forest & Woodland	2,186.0	2.2%
Vandenberg AFB	6.B.1.Nb Western North American Temperate Cliff Scree & Rock Vegetation	G563	California Cliff Scree & Rock Vegetation	577.7	0.6%
Vandenberg AFB	Open Water	11.A	Open Water	286.0	0.3%
Vandenberg AFB	2.B.2.Na Western North American Grassland & Shrubland	G271	Rocky Mountain Subalpine-Montane Mesic Herbaceous Meadow	207.5	0.2%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Vandenberg AFB	2.B.2.Na Western North American Grassland & Shrubland	G488	Southern Vancouverian Shrub & Herbaceous Bald Bluff & Prairie	6.9	0.0%
Vandenberg AFB	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	54.5	0.1%
Vandenberg AFB	2.C.5.Nc Temperate & Boreal Pacific Coastal Salt Marsh	G499	Temperate Pacific Tidal Salt & Brackish Marsh	9.6	0.0%
Vandenberg AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	5.3	0.0%
Vandenberg AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	1.4	0.0%
Vandenberg AFB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.7	0.0%
Vandenberg AFB	1.B.2.Nd Vancouverian Cool Temperate Forest	G235	California Coastal Redwood Forest	0.2	0.0%
Vandenberg AFB	1.B.2.Nd Vancouverian Cool Temperate Forest	G344	Californian Montane Conifer Forest & Woodland	0.2	0.0%
Vandenberg AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	0.0	0.0%
Vandenberg AFB Total				**99,522.1**	**100.0%**
Warren Grove Range	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	2.4	0.0%
Warren Grove Range	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G161	Pitch Pine Barrens	5,232.3	55.5%
Warren Grove Range	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	7.6	0.1%
Warren Grove Range	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	1,702.2	18.0%
Warren Grove Range	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G039	Northern Atlantic Coastal Hardwood & Conifer Swamp	836.3	8.9%
Warren Grove Range	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	776.9	8.2%
Warren Grove Range	Developed - Combined High, Medium, Low, and Roads			560.9	5.9%
Warren Grove Range	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	226.2	2.4%
Warren Grove Range	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	74.7	0.8%
Warren Grove Range	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G111	Atlantic & Gulf Coastal Plain Pondshore & Wet Prairie	8.3	0.1%
Warren Grove Range	2.C.4.Ne Atlantic & Gulf Coast Freshwater Wet Prairie Marsh & Shrubland	G752	Northern & Mid-Atlantic Coastal Wetland	0.9	0.0%
Warren Grove Range	Quarries-Strip Mines-Gravel Pits-Energy Development	8.B	Quarries-Strip Mines-Gravel Pits-Energy Development	2.0	0.0%
Warren Grove Range	Open Water	11.A	Open Water	0.9	0.0%
Warren Grove Range	7.A.1.3 Bush Fruit & Berry	G738	Tropical & Temperate Bush Fruit & Berry	0.9	0.0%
Warren Grove Range Total				**9,432.5**	**100.0%**
Westover ARB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,089.1	45.6%
Westover ARB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	50.7	2.1%
Westover ARB	Developed - Combined High, Medium, Low, and Roads			838.0	35.1%
Westover ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	12.3	0.5%
Westover ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G161	Pitch Pine Barrens	3.7	0.2%
Westover ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G495	North Atlantic Maritime Scrub Forest	24.0	1.0%
Westover ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	25.7	1.1%
Westover ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G650	Northeastern Oak-Hickory Forest & Woodland	50.9	2.1%
Westover ARB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G742	Appalachian & Allegheny Northern Hardwood-Conifer Forest	10.8	0.5%
Westover ARB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	105.2	4.4%
Westover ARB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G045	Northern Conifer & Hardwood Acidic Swamp	29.1	1.2%
Westover ARB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G046	Laurentian-Acadian-Allegheny Alkaline Swamp	0.4	0.0%
Westover ARB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	15.7	0.7%
Westover ARB	2.C.2.Na North American Bog & Fen	G183	Northeast & Midwest Prairie Alkaline Fen	8.0	0.3%
Westover ARB	2.C.2.Na North American Bog & Fen	G185	Eastern North American Boreal Alkaline Fen	0.2	0.0%
Westover ARB	2.C.2.Na North American Bog & Fen	G745	Eastern North American Sub-Boreal Acidic Bog & Fen	29.3	1.2%
Westover ARB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	32.7	1.4%
Westover ARB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G125	Eastern North American Freshwater Marsh	0.9	0.0%
Westover ARB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	0.4	0.0%
Westover ARB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G771	Laurentian & Northeast Wet Meadow	22.7	0.9%
Westover ARB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	23.5	1.0%
Westover ARB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	8.2	0.3%
Westover ARB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	4.0	0.2%
Westover ARB	Recently Disturbed or Modified	10.A	Recently Disturbed or Modified	1.2	0.1%
Westover ARB	7.A.1.1 Tree Orchard	G736	Tropical & Temperate Fruit Orchard	0.2	0.0%
Westover ARB	7.A.1.3 Bush Fruit & Berry	G738	Tropical & Temperate Bush Fruit & Berry	0.2	0.0%
Westover ARB	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	0.0	0.0%
Westover ARB Total				**2,387.2**	**100.0%**
Whiteman AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	1,552.2	29.5%
Whiteman AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	410.6	7.8%
Whiteman AFB	Developed - Combined High, Medium, Low, and Roads			1,703.2	32.4%
Whiteman AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	781.7	14.9%
Whiteman AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G017	Southeastern Great Plains Post Oak-Blackjack Oak Forest & Woodland	14.5	0.3%

Installation	DIVISION	GROUP_CODE	GROUP_	Acres	Percent
Whiteman AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G021	North-Central Beech-Maple-Basswood Forest	0.4	0.0%
Whiteman AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	121.0	2.3%
Whiteman AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G159	South-Central Interior Oak Forest & Woodland	0.7	0.0%
Whiteman AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	236.8	4.5%
Whiteman AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	267.7	5.1%
Whiteman AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	92.0	1.8%
Whiteman AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G552	Northern & Central Native Ruderal Flooded & Swamp Forest	1.6	0.0%
Whiteman AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G597	North-Central Flatwoods & Swamp Forest	4.2	0.1%
Whiteman AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G652	Silver Maple-Green Ash-Sycamore Floodplain Forest	45.1	0.9%
Whiteman AFB	Open Water	11.A	Open Water	11.8	0.2%
Whiteman AFB	1.B.3.Nb Southeastern North American Flooded & Swamp Forest	G784	Southeastern Great Plains Floodplain Forest	7.1	0.1%
Whiteman AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	2.3	0.0%
Whiteman AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	0.7	0.0%
Whiteman AFB Total				**5,253.5**	**100.0%**
Wright-Patterson AFB	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	2,781.8	36.5%
Wright-Patterson AFB	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	748.8	9.8%
Wright-Patterson AFB	Developed - Combined High, Medium, Low, and Roads			3,273.0	42.9%
Wright-Patterson AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G597	North-Central Flatwoods & Swamp Forest	51.2	0.7%
Wright-Patterson AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G652	Silver Maple-Green Ash-Sycamore Floodplain Forest	253.4	3.3%
Wright-Patterson AFB	1.B.3.Na Eastern North American & Great Plains Flooded & Swamp Forest	G673	Silver Maple-Sugarberry-Sweetgum Floodplain Forest	6.0	0.1%
Wright-Patterson AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G021	North-Central Beech-Maple-Basswood Forest	100.6	1.3%
Wright-Patterson AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	56.7	0.7%
Wright-Patterson AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G159	South-Central Interior Oak Forest & Woodland	5.2	0.1%
Wright-Patterson AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G181	Central Midwest Oak Openings & Barrens	0.4	0.0%
Wright-Patterson AFB	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	48.1	0.6%
Wright-Patterson AFB	Open Water	11.A	Open Water	113.2	1.5%
Wright-Patterson AFB	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	103.0	1.4%
Wright-Patterson AFB	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	38.9	0.5%
Wright-Patterson AFB	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	25.4	0.3%
Wright-Patterson AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G125	Eastern North American Freshwater Marsh	8.9	0.1%
Wright-Patterson AFB	2.C.4.Nd Eastern North American Wet Meadow Marsh & Shrubland	G556	Northern & Central Ruderal Wet Meadow & Marsh	0.7	0.0%
Wright-Patterson AFB	2.C.2.Na North American Bog & Fen	G183	Northeast & Midwest Prairie Alkaline Fen	9.2	0.1%
Wright-Patterson AFB	7.B.1.3 Close Grain Crop	G706	Tropical & Temperate Close Grain Crop	2.2	0.0%
Wright-Patterson AFB	5.B.2.Na North American Freshwater Aquatic Vegetation	G114	Eastern North American Freshwater Aquatic Vegetation	1.1	0.0%
Wright-Patterson AFB	7.B.4.1 Cropland Fallow Field	G711	Tropical & Temperate Open Fallow Field	0.4	0.0%
Wright-Patterson AFB Total				**7,628.2**	**100.0%**
Youngstown ARS	Developed - Combined High, Medium, Low, and Roads			173.0	54.3%
Youngstown ARS	7.C.2.1 Other Developed Vegetation	G727	Temperate Shrub & Herb Developed Vegetation	115.0	36.1%
Youngstown ARS	7.C.2.1 Other Developed Vegetation	G729	Temperate Tree Developed Vegetation	6.8	2.1%
Youngstown ARS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G021	North-Central Beech-Maple-Basswood Forest	4.2	1.3%
Youngstown ARS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G030	Northern & Central Native Ruderal Forest	4.2	1.3%
Youngstown ARS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G649	North-Central Oak-Hickory Forest & Woodland	0.8	0.3%
Youngstown ARS	1.B.2.Na Eastern North American & Great Plains Cool Temperate Forest & Woodland	G742	Appalachian & Allegheny Northern Hardwood-Conifer Forest	11.7	3.7%
Youngstown ARS	7.B.2.2 Permanent Pasture & Hay Field	G708	Tropical & Temperate Permanent Pasture & Hay Field	1.2	0.4%
Youngstown ARS	2.B.2.Nc Eastern North American Grassland & Shrubland	G059	Northern & Central Ruderal Meadow & Shrubland	0.9	0.3%
Youngstown ARS	7.A.2.1 Forest Plantation	G779	Eastern North American Temperate Forest Plantation	0.7	0.2%
Youngstown ARS	7.B.1.1 Graminoid Row Crop	G699	Tropical & Temperate Corn Crop	0.4	0.1%
Youngstown ARS Total				**318.9**	**100.0%**
Grand Total CONUS				**7,637,542.8**	
Grand Total Alaska				**109,901.6**	
Grand Total All Installations				**7,747,444.4**	

Source: LANDFIRE, 2016 and DAF, 2023

E.5 CLIMATE CHANGE

The DAF defines climate change as "Variations in average weather conditions that persist over multiple decades or longer, that encompass increases and decreases in temperature, shifts in precipitation, and changing risk of certain types of severe weather events" (DAF, 2022). This PEA describes both potential effects of the Proposed Action and No Action Alternatives on climate change and potential effects of climate change on the resources analyzed. Climate change is addressed throughout **Chapter 3** as relevant.

Updated CEQ Guidance on Considering Greenhouse Gas (GHG) and Climate Change in NEPA Analyses

CEQ's *National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change* (88 CFR Part 1196) outlines a number of elements that federal agencies should consider in evaluating impacts of their proposed actions. These elements are as follows:

Quantifying Reasonably Foreseeable GHG Emissions: Emissions that agencies should quantify include direct and indirect; upstream and downstream; increases and reductions; and net emissions over the project's lifetime. In addition, agencies should identify the project alternative with the lowest net GHG emissions or the greatest net climate benefits.

Social Cost of Emissions and Providing Context for GHG Emissions: Agencies should use the best available estimates of the social cost of GHGs. This factor is the estimated monetary cost of damages associated with a continuous increase in GHG emissions. Using scientific literature and modeling, agencies should estimate the social cost even if no other costs or benefits are monetized.

Effects of Climate Change: Agencies should consider how the potential effects of climate change caused by a project's GHG emissions would contribute to the "current and future state" of the environment based on the best available climate reports (e.g., National Climate Assessment). Where climate change risks are present, agencies should consider resilience and adaptation measures that could manage those potential effects.

Evaluation of Alternatives and Mitigation: Agencies should evaluate reasonable alternatives that would involve lower GHG emissions and consider mitigation measures to avoid or reduce GHG emissions. Among other things, these measures should be verifiable, durable, and enforceable.

Climate Commitments: Agencies should analyze consistency with climate action goals and commitments, such as international agreements. Reviews should avoid comparing a project's emissions with total domestic or international emissions.

Environmental Justice: Agencies should use environmental justice resources (e.g., from the White House Environmental Justice Interagency Council) to minimize adverse climate impacts on vulnerable populations, such as minority and low-income communities. Agencies should engage with such communities early in the scoping and project planning process to understand any unique climate-related risks and concerns.

Biological Resources

Climate change affects fire regimes directly, through changing patterns of ignition and fire-conducive weather, and indirectly, through altering vegetation composition and structure (Marlon et al., 2009). In spite of the inherent uncertainty of climate models, it is generally agreed that predicted future climates will greatly increase fire frequency, severity, and extent in many regions of the United States. Biological resources are being affected by changes in fire regimes resulting from climate change. Expanded growing seasons, increased invasive species, pests, and pathogens, and shifting breeding and migration timing in response to altered phenology have all been documented (Inkley et al., 2004). Species with small or isolated populations and low genetic variability will be least likely to withstand the impacts of climate change. Species with broader habitat ranges, wider niches, and greater genetic diversity should fare better or may even benefit.

Water Resources

Climate change can adversely affect water resources from change in temperature, timing and amount of precipitation, as well as sea level rise.

Human Health and Safety

Climate change increases the risk of uncontrolled wildfires. Fuels treatments, while they may result in a short-term risk to installation personnel during operations, would likely reduce the long-term risk of uncontrolled wildfire to the base and surrounding communities.

Air Quality

Some fuels treatments may result in short-term increases in GHG or loss of stored carbon, but would create greater long-term ecosystem health, including an overall net increase in carbon sequestration and storage. Also, by reducing vegetative fuels, these activities reduce the chance of potentially extensive wildfires, which would result in far greater quantities of GHG.

Environmental Justice

Climate change increases the risk of uncontrolled wildfires, which could adversely affect environmental justice populations in the vicinity of the DAF installations. These populations would benefit from reducing the risk of uncontrolled wildfires.

Potential Effects of Climate Change under the No Action Alternative

The potential adverse effects of the No Action Alternative on the environment, such as continued spread of nonnative invasive plant species, fuels accumulation, encroachment of undesirable species, and air quality degradation from wildfires, would be made worse by climate change. These factors act cumulatively, resulting in an increasing trend in degradation of both the human and natural environments.

The No Action Alternative would potentially contribute to climate change by increasing the risk of uncontrolled wildfires that would increase GHG emissions and reduce carbon sequestration.

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APPENDIX F - DEFENSE LOGISTICS AGENCY APPROVED HERBICIDE LIST

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APPENDIX F DEFENSE LOGISTICS AGENCY APPROVED HERBICIDE LIST

Table F-1 Defense Logistics Agency Approved Herbicide List

Herbicide Main Ingredient(s)	Formula	Trade Name(s)	USEPA Registration Number	National Stock Number	Size	Strength	Pre-or-Post Emergent	General Sector	General Target Weed Species
NON-SELECTIVE									
imazapyr *(isopropylamine salt)*	water soluble liquid concentrate	Arsenal Powerline	241 -431	6840-01-356-8902	5 gal (2 x 2.5 gal cont)	26.7%	pre- and post-emergent	pasture/rangeland, industrial non-crop sites	control of perennial broadleaf and grass weeds brush, trees
imazapyr *(isopropylamine salt)*	water soluble liquid concentrate	Habitat	241-426	6840-01-532-5403	5 gal (2 x 2.5 gal cont)	27.7%	post-emergent	aquatic, pasture / rangeland, industrial non-crop sites	control of most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species with some residual control of undesirable species that germinate above the waterline
prometon	emulsifiable liquid concentrate	Pramitol 25 E	66222-22	6840-00-145-0013	5 gal (2 x 2.5 gal cont)	25%	pre- and post-emergent	industrial non-crop sites	bare ground herbicide; targets roots; last for up to 1 year post treatment
glyphosate (*isopropylamine salt*)	water soluble liquid concentrate	Roundup Pro	93236-6	6840-01-108-9578	5 gal (2 x 2.5 gal cont)	41%	post-emergent	industrial, turf, and non-crop sites	control of broadleaf plants and grasses
	water soluble liquid concentrate			6840-01-388-0142	30 gal drum	41%	post-emergent		control of broadleaf plants and grasses
	water soluble liquid concentrate	Roundup Custom, Rodeo	524-343	6840-01-356-8893	5 gal (2 x 2.5 gal cont)	53.8%	post-emergent	aquatic, agricultural, and non-crop sites	control of broadleaf plants and grasses
glyphosate *(isopropylamine salt)* / **pelargonic acid**	water soluble liquid concentrate	Roundup Ready-to-Use	71995-8	6840-01-377-7113	0.2 gal bot	2.0% / 2.0%	post-emergent	aquatic, agricultural, and non-crop sites	control of broadleaf plants and grasses
diquat	water soluble liquid concentrate	Reward	100-1091	6840-01-005-7523	1 gal cont	37.3%	post-emergent	landscape and aquatic, industrial, recreational, commercial, residential, and public areas; turf renovation	control of weeds
	water soluble liquid concentrate			6840-00-815-2799	5 gal (2 x 2.5 gal cont)	37.3%	post-emergent	landscape and aquatic	control of weeds
glyphosate *(ammonium salt)* / **diquat dibromide**	water dispersible granule	Roundup QuickPRO	93236-4	6840-01-399-0673	5 pack (5 x 0.1 lb pack)	73.3% / 2.9%	post-emergent	industrial non-crop sites, commercial	control of weeds
	water dispersible granule			6840-01-545-4540	6.8 lb cont	73.3% / 2.9%	post-emergent		

Table F-1 Defense Logistics Agency Approved Herbicide List (continued)

Herbicide Main Ingredient(s)	Formula	Trade Name(s)	USEPA Registration Number	National Stock Number	Size	Strength	Pre-or-Post Emergent	General Sector	General Target Weed Species
NON-SELECTIVE *(continued)*									
diuron	water dispersible granule	Alligare LLC	66222-51	6840-01-341-9346	25 lb bag	80%	pre- and post-emergent	agricultural, industrial, commercial	control of wide range of annual/perennial grasses and broadleaf weeds
bromacil / diuron	water dispersible granule	Alligare LLC	81927-3	6840-01-630-3501	25 lb bag	40% / 40%	pre-emergent	agricultural (citrus), industrial, commercial	control of broad spectrum in citrus and non-crop areas
	water dispersible granule	Krovar IVM DF		6840-00-001-7710	6 lb bag	40% / 40%	pre-emergent		
tebuthiuron	flowable powder concentrate	Spike 80 DF	62719·107	6840-01-356-8891	4 lb bag	80%	pre- and post-emergent	non-crop, pasture / rangelands, rights of way, and industrial sites	control of woody plants, bush, and weeds
tebuthiuron / diuron	water dispersible granule	SpraKil SK-13	34913-15	6840-01-457-6576	40 lb cont	1% / 3%	post-emergent	non-crop, rights of way, and industrial sites	control of annual and perennial weeds and grasses
sulfometuron	water dispersible granule	Oust XP	432-1552	6840-01-356-8891	3 lb cont	75%	pre- and post-emergent	forestry and non-crop sites	control of grasses and broadleaf weeds
SELECTIVE									
imazapic *(ammonium salt)*	water soluble liquid concentrate	Plateau	241-365	6840-01-525-5869	2 gal (2 x 1 gal cont)	23.6%	post-emergent	native grass establishment and turf growth suppression on pastures/rangeland and non-crop areas	control of weeds
oryzalin	water soluble liquid concentrate	Surflan A.S·	70506-43	6840-01-318-7417	5 gal (2 x 2.5 gal cont)	40.4%	pre-emergent	agricultural, ornamental, turf, non-cropland industrial sites	control of annual grasses and broadleaf weeds
2,4-dichlorophenoxyacetic acid (2,4-D)	emulsifiable liquid concentrate	N/A	2217-455	6840-00-577-4194	5 gal (2 x 2.5 gal cont)	67.2%	post-emergent	agricultural, terrestrial, aquatic, forestry	control of broadleaf weeds
2,4-dichlorophenoxyacetic acid (2,4-D)	water soluble liquid concentrate	N/A		6840-00-664-7060	5 gal (2 x 2.5 gal cont)	46.8%	post-emergent	agricultural, terrestrial, aquatic, forestry	control of broadleaf weeds
2,4-D / mecoprop-p / dicamba water soluble liquid	ready-to-use liquid solution	Weed-B-Gon	239-2665	6840-01-377-7110	0.2 gal bot	0.128% / 0.22% / 0.05%	post-emergent	lawncare	control of broadleaf weeds
aminopyralid	water soluble liquid concentrate	Milestone VM	62719-537	6840-01-561-9603	5 gal (2 x 2.5 gal cont)	40.6%	post-emergent (more review) / partial pre-emergent	grazing, non-crop, turf grasses; and natural area rights-of-way	control of broadleaf weeds, especially thistles and clovers

Table F-1 Defense Logistics Agency Approved Herbicide List (continued)

Herbicide Main Ingredient(s)	Formula	Trade Name(s)	USEPA Registration Number	National Stock Number	Size	Strength	Pre-or-Post Emergent	General Sector	General Target Weed Species
SELECTIVE *(continued)*									
triclopyr	water soluble liquid concentrate	Garlon 4 Ultra	62719-527	6840-01-552-1822	5 gal (2 x 2.5 gal cont)	60.45%	post-emergent	pasture/rangeland, forests, industrial non-cropland and natural area rights-of-way	control of woody plants, vines and broadleaf weeds
bromacil *(lithium salt)*	water soluble liquid concentrate	Hyvar X-L	432-1548	6840-00-392-7593	4 gal (4 x 1 gal cont)	21.9%	pre- and post-emergent	non-crop industrial sites	providing residual control of many annual weeds at low rates and perennial weeds and brush at higher rates; particularly useful for control of perennial grasses
bromacil	water soluble powder	Hyvar X	432-1546	6840-01-408-9079	48 lb (12 x 4 lb bag)	80.0%	pre- and post-emergent	non-crop sites	control of broadleaf weeds and grasses
fluridone	water dispersible pellet	Sonar SRP	67690-3	6840-01-356-6001	40 lb cont	5%	post-emergent	aquatic vegetation in freshwater ponds, lakes, reservoirs, potable water sources, drainage canals, irrigation canals and rivers	control of aquatic vegetation
	liquid concentrate	Sonar A.S.	67690-4	6840-01-356-8888	0.25 gal cont	41.7%	post-emergent		
aminocylopyrachlor / chlorsulfuron	water dispersible granule	Perspective	432-1569	6840-01-643-0704	15 lb (12 x 1.25 lb bot)	39.5% / 15.8%	pre- and post-emergent	non-crop, rights of way, and industrial sites	control of broadleaf weeds, including many terrestrial and riparian invasive and noxious weeds
aminocylopyrachlor / metsulfuron methyl	water dispersible granule	Streamline	432-1570	6840-01-643-0697	24 lb (8 x 3 lb bot)	39.5% / 12.6%	pre- and post-emergent	non-crop, rights of way, and industrial sites	broadleaf weeds, vines and brush species listed in the weeds-controlled section of the label
aminocylopyrachlor / metsulfuron methyl / imazapyr	water dispersible granule	Viewpoint	432-1580	6840-01-643-0702	40 lb (8 x 5 lb bot)	22.8% / 7.3% / 31.6%	pre- and post-emergent	non-crop, rights of way, and industrial sites	broadleaf weeds and woody species, including many terrestrial and riparian invasive and noxious weeds

Notes:
Source: Individual USEPA registration documents (DLA, 2021).
bot = bottle; cont = container; gal = gallon; lb = pound; pack = package; USEPA = US Environmental Protection Agency

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APPENDIX G - AIR QUALITY

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APPENDIX G AIR QUALITY

This appendix contains supplementary regulatory and non-regulatory information applicable to the Proposed Action activities; including: discussions on relevant federal, state and local regulation and climate considerations, key components of a basic smoke management program (SMP), and information related to established online resources and tools available for estimating prescribed fire emissions

G.1 NATIONAL AMBIENT AIR QUALITY STANDARDS

The Clean Air Act (CAA) (42 United States Code 7401 et seq.) mandated the US Environmental Protection Agency (USEPA) to set air quality standards for select pollutants that are known to affect human health and the environment. The USEPA divided the country into geographical regions known as Air Quality Control Regions (AQCRs) to set the National Ambient Air Quality Standards (NAAQS) (**Table G-1**) and control air pollution. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulates equal to or less than 10 microns in diameter [PM_{10}] and particulates equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead. Regulatory areas in each AQCR that do not meet the NAAQS for any criteria pollutant are designated nonattainment, and areas reclassified from a previous nonattainment status to attainment are called maintenance areas. Real-time data on air quality and the potential for air quality health impacts are available to the public online at www.airnow.gov. In nonattainment areas, the state regulatory agency must prepare and maintain state implementation plans (SIPs) for each criteria pollutant that exceeds the NAAQS. The SIPs contain measures to reduce emissions and bring the area back into attainment through regulations for pollution controls and other agreements. Similarly, in areas designated as maintenance, maintenance plans (or maintenance SIPs) that outline steps to ensure continued compliance with the NAAQS must be prepared.

Table G-1 National Ambient Air Quality Standards

Pollutant	Standard Value [7]		Standard Type
Carbon Monoxide (CO)			
8-hour average	9 ppm	(10 mg/m^3)	Primary
1-hour average	35 ppm	(40 mg/m^3)	Primary
Nitrogen Dioxide (NO_2)			
Annual arithmetic mean	0.053 ppm	(100 µg/m^3)	Primary, Secondary
1-hour average [1]	0.100 ppm	(188 µg/m^3)	Primary
2015 Ozone (O_3)			
8-hour average [2, 3]	0.070 ppm	(137 µg/m^3)	Primary, Secondary
2008 Ozone (O_3)			
8-hour average	0.075 ppm	-	Primary, Secondary
1997 Ozone (O_3)			
8-hour average	0.08 ppm	-	Primary, Secondary
Lead (Pb)			
3-month average [4]		0.15 µg/m^3	Primary, Secondary

Table G-1 National Ambient Air Quality Standards (continued)

Pollutant	Standard Value [7]		Standard Type
Particulate ≤10 micrometers (PM_{10})			
24-hour average [5]		150 μg/m^3	Primary, Secondary
Particulate ≤2.5 micrometers ($PM_{2.5}$)			
Annual arithmetic mean [5]		12 μg/m^3	Primary
Annual arithmetic mean [5]		15 μg/m^3	Secondary
24-hour average [5]		35 μg/m^3	Primary, Secondary
Sulfur Dioxide (SO_2)			
1-hour average [6]	0.075 ppm	(196 μg/m^3)	Primary
3-hour average [6]	0.5 ppm	(1,300 μg/m^3)	Secondary

Notes:

Source: USEPA, 2018, 2020a

[1] In February 2010, the USEPA established a new 1-hour standard for NO_2 at a level of 0.100 ppm, based on the 3-year average of the 98th percentile of the yearly distribution concentration, to supplement the then-existing annual standard.

[2] In October 2015, the USEPA revised the level of the 8-hour standard to 0.070 ppm, based on the annual 4th highest daily maximum concentration, averaging over 3 years; the regulation became effective on 28 December 2015. The previous (2008) standard of 0.075 ppm remains in effect for some areas. The one-hour standard no longer exists.

[3] Annual fourth-highest daily maximum 8-hour average concentration averaged over 3 years.

[4] In November 2008, USEPA revised the primary lead standard to 0.15 μg/m3. USEPA revised the averaging time to a rolling 3-month average.

[5] In October 2006, USEPA revised the level of the 24-hour $PM_{2.5}$ standard to 35 μg/m3 and retained the level of the annual $PM_{2.5}$ standard at 15 μg/m3. In 2012, USEPA split standards for primary and secondary annual $PM_{2.5}$. All are averaged over 3 years, with the 24-hour average determined at the 98th percentile for the 24-hour standard. USEPA retained the 24-hour primary standard and revoked the annual primary standard for PM_{10}.

[6] In 2012, the USEPA retained a secondary 3-hour standard, which is not to be exceeded more than once per year. In June 2010, USEPA established a new 1-hour SO_2 standard at a level of 75 ppb, based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations.

[7] Parenthetical value is an approximately equivalent concentration for NO_2, O_3, and SO_2.

μg/m3 = micrograms per cubic meter; mg/m3 = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million; USEPA = US Environmental Protection Agency

G.2 PRESCRIBED FIRE SMOKE EMISSIONS AND IMPACTS

Wildland fuels are composed of living and dead vegetation, and burning this fuel produces smoke. Air quality from prescribed burning is most affected by smoke. Major components of smoke are water vapor and carbon dioxide (CO_2). However, as a result of incomplete combustion, smoke also contains criteria pollutants, such as CO, small amounts of nitrogen oxide (NO_x), hydrocarbons or volatile organic carbons, and particulate matter (USEPA, 1998). Prescribed fires emit fine particulate matter emissions, such as PM_{10} and, to a far greater extent $PM_{2.5}$ into the atmosphere. Fine particulate matter can easily penetrate deep into lung tissue, causing severe respiratory and cardiovascular disease. Particulate matter can also significantly reduce visibility on highways by scattering and absorbing light, resulting in unsafe driving conditions, making it the pollutant of primary concern for smoke management (NIFC, 2023). In addition to criteria pollutants, fire can also emit toxic or hazardous air pollutants (HAPs). HAPs include nearly 200 individual chemicals and mixtures that may cause or contribute to an increase in mortality, serious illness, or other hazard to human health. HAPs are generally emitted in much smaller amounts than criteria pollutants and ambient air quality standards have not been set for HAPs.

Smoke adversely impacts air quality, particularly for two of the USEPA's pollutants covered by the NAAQS, $PM_{2.5}$, and ozone. Wildland fires release significant amounts of $PM_{2.5}$; while fires do not release ozone, they do release various nitrogen oxides and volatile organic components that play a role in ozone formation. While prescribed fires can temporarily reduce air quality, they would be usually to a lesser degree than wildfires, particularly in communities and urban areas located near large wildland tracts. Additionally, unlike wildfires, prescribed fires are considered a controllable emission source and the resultant smoke can trigger a regulatory violation of NAAQS. A prescribed fire that escapes its planned boundaries immediately becomes a wildfire. Proper planning and resources are required to prevent this danger and to control it if it should occur (USDA, 2012).

G.3 USEPA Interim Air Quality Policy on Wildland and Prescribed Burns

The *Interim Air Quality Policy on Wildland and Prescribed Burns* (USEPA, 1998) is the USEPA's policy that pertains to prescribed burns in relation to air quality. The recommendations in the document are basic federal guidelines that may be followed where local guidelines are not established. The USEPA recommends state and tribal air quality managers develop and implement basic SMPs that include procedures and requirements for minimizing emissions and managing smoke dispersion and urges state and tribal air quality managers to collaborate with wildland owners and managers to mitigate the air quality impacts. The goal of a state's SMP would be to mitigate the nuisance and public safety hazards (e.g., on roadways and at airports) posed by smoke intrusions into populated areas; to prevent deterioration of air quality and NAAQS violations; and to address visibility impacts in mandatory Class I Areas (Class 1 Areas include National Parks greater than 6,000 acres or National Wilderness Areas greater than 5,000 acres). Although state and local guidelines for smoke management may have been established and they take precedence, the *Interim Air Quality Policy on Wildland and Prescribed Burns* is included in this PEA to provide context on how prescribed burns are regulated at the federal level.

G.4 Conformity Requirements for Nonattainment Areas

In addition to NEPA, additional evaluation and demonstration are required by the USEPA under the CAA's General Conformity (40 Code of Federal Regulations [CFR] 93 Subpart B) requirements for proposed projects that would take place in nonattainment and maintenance areas. The purpose of these requirements is to ensure that increases in emissions from new activities would not cause or contribute to NAAQS violations and that such activities would conform to all applicable requirements in a state implementation plan.

Federal actions, where the total direct and indirect emissions are below the *de minimis* levels of the rule [40 CFR § 93.153(b)], would be considered to be in conformity with the SIP and would be exempt from performing a comprehensive Air Quality Conformity Analysis and Determination. The USEPA established *de minimis* levels are presented in **Table G-2**. There are several other options to demonstrate conformity for actions whose emissions are greater than *de minimis* thresholds. These options include a modeling demonstration to show that emissions from the project would not increase the frequency or severity of a NAAQS violation, obtaining emission reductions that offset the new project emissions, or showing that the project's emissions are already included in, or accommodated by, the emissions inventory of the SIP for the relevant nonattainment or maintenance area.

Table G-2 General Conformity Rule *De Minimis* Emission Thresholds

Pollutant	Attainment Classification	Tons per Year
Ozone (VOC and NO_x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region (applicable to all three airfield alternatives)	100
Ozone (NO_x)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon Monoxide, SO_2 and NO_2	All nonattainment and maintenance	100
PM_{10}	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
$PM_{2.5}$ Direct emissions, SO_2, NO_x , VOC, and ammonia	All nonattainment and maintenance	100
Lead	All nonattainment and maintenance	25

Notes:
Source: USEPA, 2020b
NO_2 = nitrogen dioxide; NO_x = nitrogen oxides; $PM_{2.5}$ = particulates equal to or less than 2.5 microns in diameter; PM_{10} = particulates equal to or less than 10 microns in diameter; SO_2 = sulfur dioxide; VOC = volatile organic compound

General Conformity for Prescribe Fire Activities

Although General Conformity *de minimis* thresholds are used in this analysis to indicate levels of emissions that would be considered to conform to the SIP, it should be noted that emissions from prescribed fires conducted in accordance with an SMP are “presumed to conform” with the CAA and SIP under 40 CFR § 93.153(i)(2).

Specifically, prescribed fires conducted in accordance with an SMP that meets the requirements of USEPA *Interim Air Quality Policy on Wildland and Prescribed Fires* (USEPA, 1998), or an equivalent replacement USEPA policy, are presumed to conform with General Conformity. The USEPA *Interim Air Quality Policy on Wildland and Prescribed Fires* requires that the proposed fire projects are managed within a certified SMP that require regional coordination (cooperation of all jurisdictions in an airshed) of burn plan authorization and real-time air quality monitoring at sensitive receptors, when warranted, in addition to the basic program components. Most states would have established their own SMPs. For example, SMPs established for the States of Arizona and Nevada are certified by the USEPA or meet the requirements of the USEPA *Interim Air Quality Policy on Wildland and Prescribed Fires* (ADEQ, 2022; NDEP, 2013).

If the prescribed fire is not part of a smoke management plan a conformity evaluation would be required by the federal agency. One of the criteria that federal agencies can use as a basis for a conformity determination is inclusion of the activity in the state or tribal implementation plan (SIP/TIP). If the SIP/TIP includes emissions from prescribed fires, then the federal agency can rely on a state or tribal statement that the emissions are accounted for in the attainment demonstration (USEPA, 2022). Conformity demonstrations can be made on an annual basis for all burns within the airshed of a nonattainment or maintenance area for prescribed fire projects. Alternatively, a demonstration can be made for each individual fire project.

G.5 NATIONAL WILDFIRE COORDINATING GROUP PRESCRIBED BURN SMOKE MANAGEMENT GUIDE

Managing smoke is part of wildland fire management. Protecting human life is the foremost priority in all aspects of wildland fire management, including smoke, while protecting natural resources and personal property are secondary priorities. Many of the specific requirements for smoke management are therefore found in SIPs and SMPs. The National Wildfire Coordinating Group (NWCG)'s PMS 420-2, *Smoke Management Guide for Prescribed and Wildland Fire* (NWCG, 2001) and PMS 420-3, *Smoke Management Guide for Prescribed Fire* (NWCG, 2020) outline why fire is important to the ecosystem, regulations that impact smoke management, best management practices for reducing emissions during prescribed burn, and ways to monitor air quality during prescribed burns. As recommended by the USEPA, the NWCG's *Smoke Management Guide for Prescribed and Wildland Fire* should be consulted when performing emissions calculations. Specifically, Element 19 of the NWCG's *Standards for Prescribed Fire Planning and Implementation* includes a comprehensive description of smoke management and air quality (NWCG, 2022). This element includes a discussion on compliance with local, county, state, tribal, and federal air quality regulations, and other air quality aspects, such as permit requirements, smoke-sensitive receptors, non-attainment areas, Class I Areas, air quality modeling, and mitigation.

Table G-3 presents the key components of a basic prescribed burn SMP (NWCG, 2001; USEPA, 1998). Department of the Air Force (DAF) installations should consult their local fire and air emissions jurisdictional agencies for required permits. The local SMP would allow for agricultural and prescribed burning as resource management tools, while at the same time minimizing smoke impacts to the public. A basic SMP that is managed by local authorities would include some key components, as presented in **Table G-3.**

G.6 STATE AND LOCAL REGULATIONS

Typically, the state or local regulatory authorities also establish air emission control requirements and requirements for open burning for areas under their jurisdiction. Under state laws, open burning requirements are generally set at the local level, to account for local conditions, and are tailored to address specific problems. For specific requirements, the air quality agency or regulatory body, or the land use planning body in the specific state that the burn is to occur, would need to be consulted, as each state has varying requirements.

General prohibitions against all open burning are determined at the municipal or county (local) level. State air quality regulations prohibit the open burning of any materials that generates hazardous air pollutants such as oils, railroad ties, and treated wood products. In some cases, open burning permits must be obtained from the state regulatory authority. Local air quality rules applicable to the fuels reduction and management activities would include, but are not limited to, the following:

- Visible Emissions
- Fugitive Dust and Nuisance
- Prescribed Burning SMP

Table G-3 Key Components of a Basic Smoke Management Program

Components	Details
Permitting	An air permit may be required for all agricultural and prescribed burning projects. The permit typically: • Includes conditions that limit burning to permissive burn days, • Limits types of material to be burned, • Requires material burned to be free of moisture and dirt, and • Requires use of approved ignition devices. The permit allows the regulatory authority to add conditions to limit the amount of material to be burned or burn hours if necessary. Additionally, it may issue special permits for agricultural or prescribed burning on no-burn days if denial of such permits would threaten imminent and substantial loss.
Registration and Reporting	All persons who want to conduct prescribed burning must register their planned burn projects with the local regulatory authority. The burn registration must include: • The name of the permittee, contact person with phone number, • A listing of projects planned with descriptions of their locations, and • An estimate of the total acreage or tons of material to be burned. A daily report must be submitted during the burn season.
Burn Authorization System	Some local authorities operate a daily burn authorization system that specifies the amount, timing, and location for each burn project. Burn authorizations are issued no more than 24 hours in advance of ignition of each project. A burn authorization authorizes the ignition of a burn only if the smoke management conditions specified in the Smoke Management Program and plan are met at the time of ignition and for the duration of the burn. It is the burner's responsibility to ensure all conditions listed in the program are met before ignition. Multi-day burns or burns greater than a specific number of acres to be burned in one day require daily authorization.

Table G-3 Key Components of a Basic Smoke Management Program (continued)

Components	Details
Smoke Management Planning	In some states, prescribed burns less than a certain *de minimis* amount of acres (e.g., 10 acres) or that will emit less than a specified *de minimis* levels of particulate matter emissions (e.g., one ton of particulate matter) may only need to obtain an air permit. Burn projects greater than *de minimis* acres or *de minimis* particulate matter emissions must complete a smoke management plan. The plan specifies the “smoke prescription,” which is a set of air quality, meteorological, and fuel conditions that must exist before the burn can be ignited. Smoke Management Programs are required to include the following information: • Meteorological prescription, • Contingency actions, • Smoke mitigation, • Burning alternatives, • Smoke sensitive receptors, • Public notification and complaint handling procedures, and • Smoke monitoring. The responsible burn agency must complete additional documentation for burns that are either larger, created smoke impacts, or that were burned on No Burn Days.

Source: USEPA, 1998.

G.7 AIR FORCE REGULATIONS

Air Force Manual 32-7002: *Environmental Compliance and Pollution Prevention*, dated 4 February 2020, provides details of the DAF’s Air Quality Compliance and Resource Management Program and explains how to assess, attain, and sustain compliance with the CAA; other federal, state, and local environmental regulations.

G.8 CLASS I AREAS AND VISIBILITY CONCERNS

Under the CAA (an its later amendments), special protection for air quality is provided in pristine areas of the country known as Class I Areas (Class I Areas include National Parks greater than 6,000 acres or National Wilderness Areas greater than 5,000 acres). Any significant deterioration of air quality is considered significant in Class I Areas. A list of Class I Areas is found on USEPA’s website at https://www.epa.gov/visibility/list-areas-protected-regional-haze-program. The DAF installation should consider the locations of Class I Areas when planning fuel treatments. The USEPA has also established regional haze regulations that require states to make initial improvements in visibility within their Class I Areas. Under the CAA, the responsibility to protect the quality of air in Class I Areas lies with the federal land managers. Any proposed new or modified source of air pollution that may adversely impact these values would need careful consideration. The effects of fire emissions on the public welfare aspects of the NAAQS for particulate matter are addressed in terms of visibility impairment and regional haze.

Visibility may be more of a concern if there is nighttime burning because a temperature inversion may trap smoke near the ground and can create a serious visibility hazard, especially in periods of high humidity (which occurs on most nights). In addition, smoke mixing with existing fog could drastically reduce visibility. In mountainous areas, cool air drainage at night will carry smoke down slopes, causing visibility problems in lowlands and valleys. On the Coastal Plain, nighttime air drainage often follows waterways. Conditions can be especially hazardous near bridge crossings because of the higher humidity there. Of course, the earlier in the day a fire is completed, the less likely it is to cause nighttime smoke problems (USDA, 2012).

G.9 GREENHOUSE GASES AND CLIMATE CONSIDERATIONS

Greenhouse gases (GHGs) are gases, occurring from natural processes and human activities, that trap heat in the atmosphere. The accumulation of GHGs in the atmosphere helps regulate the earth's temperature and is believed to contribute to global climate change. USEPA regulates GHG emissions via permitting and reporting requirements that are applicable mainly to large stationary sources of emissions. GHG emissions are expressed in terms of the carbon dioxide equivalent emissions (CO_2e), which is a measure used to compare the emissions from various GHGs based on their Global Warming Potential (GWP). The GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms the Earth compared with CO_2 over the same time period. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases.

Major components of smoke from fires are water vapor and CO_2, which is a nontoxic gas found in nature. It is released as a part of the respiration process by all living organisms and is taken up by plants for use in photosynthesis. The climate impact of CO_2 emissions is a regional issue that can be considered more in terms of global emissions. The CAA has no requirement for the USEPA to establish ambient air quality standards for carbon dioxide emissions. There is evidence that seems to indicate a trend of increasing global temperature over the past century caused by an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences worldwide. Revised draft guidance from the Council on Environmental Quality, dated 20 April 2022, recommends that agencies consider both the potential effects of a proposed action on climate change, as indicated by its estimated greenhouse gas emissions, and the implications of climate change for the environmental effects of a proposed action.

G.10 SITE-SPECIFIC ASPECTS FOR CONSIDERATION

This PEA outlines general air quality impacts of the Proposed Action. To determine site-specific air quality impacts, each installation would need to consider the information contained in this PEA along with certain key attributes that would be unique to each installation. For example, the NAAQS attainment status would be specific to the area where proposed fuel treatment activities would occur and would need to be considered by each installation to conduct site-specific air quality analyses. **Table G-4** lists the various site-specific aspects for consideration and briefly discusses how each aspect may be considered.

Table G-4 Site-Specific Aspects for Consideration

Site-Specific Aspects	Details
Historical (for example, past 10 years) prescribed burn information, if available	Consider using information either from ongoing fuels reduction programs at the installation, or projected emissions calculations for fuels reduction activities, mainly for fires. The amount of air emissions from fires would vary greatly depending on the location, frequency, acreage, and equipment used. Emissions projections for fires would be more reliable than using emission calculations, if it is based on estimates of acres burned, pre-burn fuel loading by vegetation type and consumption by vegetation type specific to the installation.
Attainment status or air quality conditions	Consider the most current attainment status in the affected area where proposed fuels reduction activities would take place. Determine if status is nonattainment, maintenance, or attainment/unclassified for each criteria pollutant. Attainment status of the proposed activity location would determine relevance of General Conformity, as General Conformity applies only in nonattainment and maintenance areas.
Air quality trends	Consider how air quality is trending at the location of the proposed project by reviewing data from state or local air quality monitoring stations. It is important to consider air quality monitoring trends, especially if data indicates that pollutant concentration is increasing or is already close to the daily or annual NAAQS for $PM_{2.5}$ or PM_{10}.
Applicable state and local air quality requirements	Consider local/state fugitive dust requirements, smoke management plans, land management plans, fire ordnances, or policies (e.g., burn plans and authorization to burn) within whose jurisdiction the fuels reduction activities would occur.
Sensitive receptors	Consider Class I Areas or smoke-sensitive areas that include areas close to urban and rural population centers, schools, hospitals, and other locations that may be sensitive to smoke impacts for health, safety, or aesthetic reasons. Any potential for substantial amounts of smoke intrusions into sensitive areas and visibility impacts, if relevant, should be considered. Even though several DAF installations tiering of this PEA are in less populated, rural, or undeveloped areas, sensitive receptors would be present throughout all installations.
Planned smoke reduction measures and best management practices	Smoke management and emission reduction techniques are considered best management practices. Emission reduction measures should be selected on a case-by-case basis based on what is best suited for the planned activities. Some practices have potential negative outcomes and must be evaluated carefully and used only after understanding any potential tradeoffs.

Notes:
DAF= Department of the Air Force; NAAQS= National Ambient Air Quality Standards; PEA = Programmatic Environmental Assessment; $PM_{2.5}$ = particulates equal to or less than 2.5 microns in diameter; PM_{10} = particulates equal to or less than 10 microns in diameter

G.11 AIR QUALITY EMISSION FACTORS FOR PRESCRIBED BURNING

The following is a compilation of emission factors and established online tools for prescribed burning. These tools can be used to estimate the amount of fuel that could be burned as part of fuel treatments within a specific geographic area and estimate emissions from a proposed project. By comparing estimated emissions with General Conformity *de minimis* or prevention of significant deterioration (PSD) thresholds, DAF installations can make a first-cut determination as to whether the amount of fuel burned could result in annual emissions that may exceed the General Conformity *de minimis* or PSD thresholds as applicable.

G.12 EMISSION FACTORS FOR PRESCRIBED BURNING

1. AP-42 Emission Factors (USEPA, 1996)
   The USEPA AP-42 provides average emission factors for wildfires and prescribed burning in Chapter 13.1 *Wildfires And Prescribed Burning*.
   Table 13.1-3 presents emission factors from various pollutants, by fire and fuel configuration. Table 13.1-4 gives emission factors for prescribed burning, by geographical area within the United States. The emission factors are averages and can vary by as much as 50 percent with fuel and fire conditions.
2. Prescribed Fires Emissions Tool
   A Microsoft Excel tool has been developed by the Air Force Civil Engineering Center, Compliance Technical Support Branch (AFCEC/CZTQ) to assist in calculating emissions from prescribed fires. The tool incorporates the location and region where a prescribed fire is proposed and accounts for the fuel loading mixture and produces emissions for all criteria pollutants as well as CO_2e. Please contact the AFCEC/CZTQ Air Quality subject matter expert for assistance with obtaining the tool and for performing calculations using this tool.

G.13 HOW TO ESTIMATE EMISSIONS USING THESE FACTORS

To use these factors, multiply the mass of fuel consumed per hectare by the emission factor for the appropriate fuel type. The mass of fuel consumed by a fire is defined as the available fuel. While AP-42 provides estimated fuel consumed by wildfires for various geographical regions in the country in Table 13.1-1, it is recommended that the fuel consumption data are used only if site-specific data or more recent data is unavailable.

3. Scientific study published in International Journal of Wildland Fire (Prichard et al., 2020).
   This study uses Smoke Emissions Reference Application (SERA) (see item 4 below for details) to produce a standardize dataset of summarized emissions factors for $PM_{2.5}$, CO, CO_2, CH_4 (methane), NH_3 (ammonia), SO_2, and NO_x that are provided by:

- Geographical region (southeastern US, western US and Canada, and northern US and Canada),
- Regional vegetation type (e.g., conifer forest, broadleaf deciduous forest, mixed conifer, broadleaf deciduous forest, shrubland, grassland and organic soil), and
- Various combustion phases (e.g., flaming, smoldering).

This study provides emission factors that are far more extensive than AP-42 emissions factors and can be used as a useful tool for use in emissions inventories and wildland fire management. As reproduced from the study, and as shown in **Figures G-1**, **G-2**, and **G-3**, emissions factors are provided for southeastern US, western US and Canada, and for northern US and Canada.

Figure G-4 presents sample calculations contained in the study that presents estimated $PM_{2.5}$ emissions for southeast pine and western pine forests using SERA emissions factors.

4. Piled Fuels Biomass and Emissions Calculator (FERA, 2014)
   This tool is an easy to use, biomass and emissions calculator to estimate pollutant emissions from pile burns by region. Various pile burn inputs — such as pile shape and dimensions, pile volume, and fuel consumption — are used to estimate emissions of criteria pollutants and carbon dioxide in tons per year.
5. Smoke Emissions Reference Application Online Database (SERA, 2023)
   SERA is a searchable online existing emissions factors database that serves as a clearinghouse for field burn based emission factors for Canada and the United States. The tool supports summaries of emission factors for use in emissions inventories and wildland fire management. A search for emission factors with options for various parameters, such as region (e.g., North, Southeast, West), burn type (broadcast prescribed pile burn), USEPA pollutant category (criteria pollutants, hazardous air pollutants, greenhouse gases), fuel (conifer, grassland) type, modified combustion efficiency and burn type (broadcast, pile). The SERA database contains existing emissions factors of 276 known air pollutants in standardized units (grams/kilogram). The database was created to enable analysis and summaries of existing emission factors and creation of average emission factors to be used in decision support tools for smoke management. The Prichard study referenced above uses SERA for estimating emissions.

The following figures, **Figures G-1** through **G-4**, are from the scientific study, *Wildland fire emission factors in North America: synthesis of existing data, measurement needs and management applications, published in International Journal of Wildland Fire* (Prichard et al., 2020).

Table 4. Summarised emission factors (g kg^{-1}) for the south-eastern US by combustion phase for particulate matter <2.5 µm ($PM_{2.5}$), carbon dioxide (CO_2), carbon monoxide (CO), methane (CH_4) ammonia (NH_3), sulfur dioxide (SO_2), nitrogen oxide (NO), nitrogen dioxide (NO_2) and oxides of nitrogen (NO_x)

Mean, mean emission factor (g kg^{-1}); s.d., standard deviation (g kg^{-1}); *n*, count of data points; fire-average F/S, combined flaming, smouldering and unspecified combustion phases. F, flaming-phase EF, S, smouldering-phase EF. Cells are missing when there were insufficient records

Pollutant	Fire-average F/S			F			S		
	Mean	s.d.	*n*	Mean	s.d.	*n*	Mean	s.d.	*n*
Conifer forest (SE pine)									
$PM_{2.5}$	25.29	16.00	102	20.91	10.95	60	29.35	18.23	18
CO_2	1576.04	248.04	86	1691.78	51.78	39	1462.00	170.14	11
CO	97.09	43.11	109	73.88	21.54	39	165.87	38.09	11
CH_4	4.12	5.02	47	2.41	1.26	38	11.36	8.06	9
NH_3	0.82	1.25	31	0.52	0.76	22	1.56	1.87	9
NO	1.86	1.80	28	1.20	0.81	18	0.78	0.94	3
NO_2	1.23	0.83	23	1.62	0.74	15	0.93		1
NO_x	3.34	2.80	27	2.43	1.10	15	1.56	0.80	3
SO_2	0.99	0.40	10	1.06	0.31	7	1.55		1
Shrublands									
$PM_{2.5}$	12.03	4.25	5	12.03	4.25	5			
CO_2	1707.96	192.21	15	1746.03	95.84	13	1460.5	515.48	2
CO	73.50	17.00	16	70.40	14.01	13	93.75	32.17	2
CH_4	2.38	0.87	12	2.20	0.45	10	3.30	2.12	2
NH_3	2.06	2.27	6	1.15	0.50	5	6.60		1
NO	4.71	2.45	7	3.77	2.24	5	7.05	0.78	2
NO_2	0.95	0.43	3	0.95	0.43	3			
NO_x	2.86	0.78	4	2.86	0.78	4			
SO_2	0.74	0.60	6	0.67	0.64	5	1.1		1
Mixed forest									
$PM_{2.5}$	14.78	0.94	4	14.78	0.94	4			
CO_2	1650.50	61.10	10	1658.33	59.24	9	1580.0		1
CO	84.19	20.30	12	76.87	12.10	9	129.50		1
CH_4	2.67	1.28	9	2.27	0.45	8	5.90		1
NH_3	2.13	1.29	5	1.74	1.09	4	3.70		1
NO	3.69	3.09	3	2.39	2.98	2	6.30		1
NO_2	1.14	0.62	2	1.14	0.62	2			
NO_x	2.18	1.31	2	2.18	1.31	2			
SO_2	0.70	0.16	4	0.77	0.12	3	0.50		1
Grasslands									
$PM_{2.5}$	12.080	5.24	10	12.08	5.24	10			
CO_2	1685.82	81.19	15	1696.38	72.78	14	1538.0		1
CO	68.17	27.16	16	64.6	25.27	14	119.0		1
CH_4	2.53	1.51	10	2.21	1.20	9	5.4		1
NH_3	1.30	0.70	4	1.37	0.84	3	1.1		1
NO	5.33	2.14	4	5.83	2.30	3	3.8		1
NO_2									
NO_x	3.53	0.40	3	3.53	0.40	3			
SO_2	0.83	0.34	4	0.93	0.32	3	0.5		1

Figure G-1 Southeastern United States Emissions Factors

Table 5. Summarised emission factors (g kg^{-1}) for the western US by combustion phase for particulate matter <2.5 µm ($PM_{2.5}$), carbon dioxide (CO_2), carbon monoxide (CO), methane (CH_4), ammonia (NH_3), sulfur dioxide (SO_2), nitrogen oxide (NO), nitrogen dioxide (NO_2) and oxides of nitrogen (NO_x)

Mean, mean emission factor (g kg^{-1}); s.d., standard deviation (g kg^{-1}); n = count of data points. Fire-average F/S, combined flaming, smouldering and unspecified combustion phases; F, flaming-phase EF; S, smouldering-phase EF

Pollutant	Fire-average F/S			F			S		
	Mean	s.d.	n	Mean	s.d.	n	Mean	s.d.	n
Conifer forest (western pine and mixed conifer)									
$PM_{2.5}$	14.32	5.51	24	13.50	5.18	21	20.05	4.97	3
CO_2	1629.54	63.43	147	1662.92	52.08	87	1579.40	44.20	58
CO	104.01	34.93	147	79.97	20.85	87	140.30	15.57	58
CH_4	5.05	2.41	144	3.41	1.33	85	7.59	1.16	57
NH_3	0.90	0.57	54	0.83	0.53	49	1.74	0.09	3
NO	1.79	1.09	58	1.71	0.70	53	2.60	3.12	5
NO_2	1.38	0.75	56	1.40	0.71	52	1.05	1.23	4
NO_x	1.41	0.95	6	1.49	0.77	2	1.08	1.43	2
SO_2	1.38	0.61	50	1.35	0.54	47	1.73	1.44	3
Shrublands									
$PM_{2.5}$	7.88	2.21	14	7.12	1.22	10	9.79	3.15	4
CO_2	1587.88	141.8	98	1684.48	82.4	43	1538.81	72.42	7
CO	97.03	54.82	116	63.87	17.6	51	76.32	40.34	17
CH_4	2.16	1.37	46	1.87	1.16	38	4.14	1.15	6
NH_3	1.60	1.52	53	1.16	0.98	39	3.13	2.05	12
NO	2.42	1.29	35	2.22	0.91	32	4.53	2.84	3
NO_2	0.79	0.66	34	0.80	0.67	33	0.50		1
NO_x	3.33	1.97	35	3.11	1.21	22	2.89	2.40	10
SO_2	0.73	0.28	27	0.75	0.28	25	0.55	0.21	2
Mixed forest									
$PM_{2.5}$	6.83		1	6.83		1			
CO_2	1669.50	134.67	4	1669.50	134.67	4			
CO	55.26	22.07	4	55.26	22.07	4			
CH_4	2.35	1.78	4	2.35	1.78	4			
NH_3	0.60	0.34	3	0.60	0.34	3			
NO	1.65	1.39	4	1.65	1.39	4			
NO_2	1.53	1.97	4	1.53	1.97	4			
NO_x	2.55	1.40	4	2.55	1.40	4			
SO_2	0.49	0.33	3	0.49	0.33	3			
Grasslands									
$PM_{2.5}$									
CO_2	1421	208.48	8	1547.3	52.17	5	1210.5	200.83	3
CO	56.26	38.89	8	29.62	11.91	5	100.67	16.68	3
CH_4	2.90	1.86	5	1.63	0.75	3	4.80	0.84	2
NH_3	0.56	0.53	4	0.30	0.08	3	1.35		1
NO	2.86	1.58	7	2.77	1.50	5	3.09	2.42	2
NO_2	3.13	2.36	2	4.80		1	1.46		1
NO_x									
SO_2	2.98		1				2.98		1

Figure G-2 Western United States Emission Factors

Table 6. Summarised emission factors (EFs; g kg^{-1}) for northern boreal forests and grasslands by combustion phase for particulate matter <2.5 microns ($PM_{2.5}$), carbon dioxide (CO_2), carbon monoxide (CO), methane (CH_4), ammonia (NH_3), sulfur dioxide (SO_2), nitrogen oxide (NO), nitrogen dioxide (NO_2) and oxides of nitrogen (NO_x)

Mean, mean emission factor (g kg^{-1}); s.d., standard deviation (g kg^{-1}); *n*, count of data points; fire-average F/S, combined flaming, smouldering and unspecified combustion phases; F, flaming-phase EF; S, smouldering-phase EF

Pollutant	Fire-average F/S			F			S		
	Mean	s.d.	*n*	Mean	s.d.	*n*	Mean	s.d.	*n*
Northern forest									
$PM_{2.5}$	10.53	0.81	3	10.53	0.81	3			
CO_2	1614.26	116.24	11	1624.11	132.23	8	1616.00		1
CO	86.49	35.27	11	72.79	18.41	8	113.00		1
CH_4	2.60	1.39	12	2.03	0.78	9	4.70		1
NH_3	1.03	0.48	7	1.10	0.49	6			
NO	2.28	1.64	4	2.94	1.19	3	0.29		1
NO_2	1.94	1.13	3	2.40	1.13	2	1.03		1
NO_x	1.28	0.32	2						
SO_2	0.13	0.06	3	0.13	0.06	3			
Northern grassland									
$PM_{2.5}$	9.89	6.90	4	9.89	6.90	4			
CO_2	1697.38	39.83	5	1697.38	39.83	5			
CO	64.44	16.18	5	64.44	16.18	5			
CH_4	2.04	0.99	5	2.04	0.99	5			
NH_3	0.77		1	0.77		1			
NO	2.27		1	2.27		1			
NO_2									
NO_x									
SO_2									

Figure G-3 Northern Boreal Forests and Grasslands Emission Factors

Box 1. Using summarised emission factors to estimate wildland fire emissions

There are two approaches to estimating $PM_{2.5}$ emissions using summaries in Tables 4 and 5 to explore differences in estimated values using comparative approaches. We use EF values available for south-eastern conifer (Table 4) and western mixed conifer forests (Table 5) to represent flaming and smouldering emissions as well as fire average (flaming and/or smouldering; F/S) emissions. Following Urbanski (2014), we use the recommended residual coarse wood EF of 33 g kg^{-1} and residual duff EF of 50 g kg^{-1} to estimate residual emissions from coarse wood and duff. Using estimates of flaming, smouldering and residual smouldering consumption, based on assumed proportions in Consume v5.0 (see Eqn 1), we can multiply consumption in Mg ha^{-1} by the recommended EF by phase (g kg^{-1}) to calculate $PM_{2.5}$ emissions (kg ha^{-1}).

Site	Flaming EF (g kg^{-1})	Smouldering EF (g kg^{-1})	Residual Smouldering Coarse wood (g kg^{-1})	Residual smouldering duff (g kg^{-1})	Fire average EF (F/S) (g kg^{-1})
SE conifer	20.91	29.35	33	50	25.29
W conifer	13.5	20.05	33	50	14.32

Sample calculations

To estimate emissions from sound coarse wood (7.6 to 22.9 cm diameter) in a south-eastern US forest with hurricane damage, we can apply three separate EFs to represent flaming, smouldering and residual consumption (where EFs are expressed in kg Mg^{-1} because 1 g kg^{-1} = 1 kg Mg^{-1}):

$PM_{2.5}$ emissions of coarse wood =
(22.4 Mg ha^{-1} × 0.6 Flaming × 20.91 kg Mg^{-1}) +
(22.4 Mg ha^{-1} × 0.3 Smouldering × 29.35 kg Mg^{-1}) +
(22.4 Mg ha^{-1} × 0.1 Residual × 33 kg Mg^{-1}) = 552.18 kg ha^{-1} (1)

For a more general estimate, fire-average EFs are available and can be used instead. For SE conifer forests, this results in a slightly higher estimation of emissions.

$PM_{2.5}$ emissions of 1000-h wood =
22.4 Mg ha^{-1} × 25.29 kg Mg^{-1} = 566.5 kg ha^{-1} (2)

Where fuel consumption is not available by fuel category, the fire average EF can be used to estimate consumption based on total site fuel loading. This calculation can be appropriate for some fuels such as the SE conifer forest in this example, or potentially significantly underestimate $PM_{2.5}$ emissions in sites dominated by heavier fuels and organic soils.

For example, for an SE conifer site dominated by pine litter and shrubs that are mostly consumed in the flaming phase of combustion, the fire average EF may overestimate emissions compared with using the flaming EF:

Fire-average EF estimate of $PM_{2.5}$ emissions =
13 Mg ha^{-1} consumed × 25.29 kg Mg^{-1} = 328.77 kg ha^{-1} (3)
Flaming EF estimate of $PM_{2.5}$ emissions =
13 Mg ha^{-1} consumed × 20.91 kg Mg^{-1} = 271.83 kg ha^{-1} (4)

For a W conifer site dominated by coarse wood, using the fire-average EF may substantially underestimate emissions:

Fire-average EF estimate of $PM_{2.5}$ emissions =
20 Mg ha^{-1} consumed × 14.32 kg Mg^{-1} = 286.40 kg ha^{-1} (5)
Residual coarse wood estimate of $PM_{2.5}$ emissions =
20 Mg ha^{-1} consumed × kg Mg^{-1} = 660.00 kg ha^{-1} (6)

Figure G-4 Using Summarized Emission Factors to Estimate Wildland Fire Emissions

G.14 AIR QUALITY STUDIES INCORPORATED BY REFERENCE

The references listed in **Table G-5** are sources of information incorporated into this PEA. These references are considered important because the impact analyses recorded in these documents are relevant to the effects of the Proposed Action on air quality.

Table G-5 Air Quality Studies Incorporated by Reference

Reference Citation and Title	Brief Summary
BLM, 2020 Department of Interior BLM Final Programmatic EIS for Fuels Reduction and Rangeland Restoration in the Great Basin Volume 1: Executive Summary, Chapters 1 through 5.	This Programmatic EIS analyzes the effects of several options for carrying out fuels reduction and rangeland restoration projects on public land within portions of California, Idaho, Nevada, Oregon, Utah, and Washington.
DAF, 2015 Final Environmental Assessment Fire Management for the Cedar Peak Area on the Nevada Test and Training Range	This EA analyzes the potential environmental consequences of the Nellis AFB proposal to implement the NTTR WFMP. The primary element of the WFMP analyzed in this EA is the proposed reduction of fuels at Cedar Peak.
DHS, 2021 Draft Environmental Assessment FEMA Bastrop County Pine Valley Estates Hazardous Fuels Reduction Project, Bastrop, Texas	This EA analyzes the potential environmental consequences of the Bastrop County Hazardous Fuels Reduction Project. It involves an 860-acre area of privately and publicly owned land, of which approximately 520 acres may undergo hazardous fuels reduction.
DOI, 2012 Environmental Assessment Bureau of Reclamation. Independence Lake Forest Thinning and Hazardous Fuels Reduction.	This EA is for hazardous fuel reduction project involving 432 acres of mechanical thinning and restoration treatments. Air quality disturbance results mainly from use of heavy equipment, worker activity, vehicle traffic, and smoke from prescribed burning.
FEMA, 2019 Final Programmatic Environmental Assessment Department of Homeland Security Wildfire Hazard Mitigation Projects in South Dakota	This PEA analyzes potential impacts associated with FEMA's wildfire hazard mitigation activities for the State of South Dakota.
FEMA, 2020 Final Environmental Assessment Stemilt Basin and Scout-A-Vista Fuels Reduction Projects HMGP-WA-5182-08 and HMGP-WA-5100-05 Chelan County, Washington	This EA analyzes the effects of fuels reduction work in four treatment areas to reduce spread of wildfire.

Table G-5 Air Quality Studies Incorporated by Reference (continued)

Reference Citation and Title	Brief Summary
USDA, 2012 Environmental Assessment Forest Service Arrowhawk Fuels Reduction and Ecosystem Enhancement Project, Carson Ranger District, Humboldt-Toiyabe National Forest Washoe County, Nevada	This EA is for fuels reduction project within 2,500 acres through mechanical means such as mastication, mowing, chainsaw cutting, chipping, piling and/or prescribed fire.
USDA, 2013 Environmental Assessment Forest Service White Rock Prescribed Burning Project Ozark-St. Francis National Forest Boston Mountain Ranger District Main Unit	This EA analyzes a fuels reduction project on 2,500 acres through mechanical means such as mastication, mowing, chainsaw cutting, chipping, piling, and prescribed fire.
USEPA, 2021 Comparative Assessment of the Impacts of Prescribed Fire Versus Wildfire, Case Study in the Western United States USEPA/600/R-21/197	A scientific technical assessment of air quality and health impacts of prescribed fire compared with wildfire using two case study fires and hypothetical fire scenarios. For both case studies total acres burned, $PM_{2.5}$ emissions, fuel, and fuel consumption are shown for wildfires, hypothetical fires, and prescribed fires.

Notes:
BLM = Bureau of Land Management; DAF = Department of the Air Force; DHS = Department of Homeland Security; DOI = Department of the Interior; EA = Environmental Assessment; EIS = Environmental Impact Statement; FEMA = Federal Emergency Management Agency; NTTR = Nevada Test and Training Range; PEA = Programmatic Environmental Assessment; PM2.5 = particulate matter smaller than 2.5 microns; USDA = US Department of Agriculture; USEPA = US Environmental Protection Agency; WFMP = Wildland Fire Management Plan

G.15 References

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APPENDIX H – LIST OF PREPARERS

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APPENDIX H LIST OF PREPARERS

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Camille Gracia	AFCEC/CZQT
Lt Col Aimee Haney	AF/JAOE
Mark Kinkade	AFMC AFIMSC/PA
Karla Meyer	AFCEC/CZQT
Alberto Moreno	AFCEC/CZOF
Alison Rubio	AFCEC/CZQT
Brad Shoemaker	AFCEC/CZOF
Gary Stuebben	AF/JAOE
Brian Vandelist	AFCEC/CZOF
Aisha Wiig	AFCEC/CZOF