DRAFT

ENVIRONMENTAL ASSESSMENT (EA)

for

INSTALLATION DEVELOPMENT

at

Fairchild Air Force Base, Washington

Prepared for:

Department of the Air Force

March 2020

Letters or other written comments provided may be published in the Final EA. As required by law, substantive comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)

INSTALLATION DEVELOPMENT
AT FAIRCHILD AFB, WASHINGTON

Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality (CEQ) Regulations, Title 40, Code of Federal Regulations (CFR) Section 1500-1508, and 32 CFR Part 989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with implementation of 13 projects programmed as approved installation development priorities for the next four years at Fairchild Air Force Base (AFB), Spokane County, Washington.

The purpose of the proposed installation development projects is to provide infrastructure and functionality improvements necessary to support the mission of the 92nd Air Refueling Wing and tenant units at Fairchild AFB. The Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs.

The Environmental Assessment (EA), incorporated by reference into this finding, analyzes the potential environmental consequences of activities associated with projects identified under the Proposed Action, and provides environmental protection measures to avoid or reduce adverse environmental impacts.

The EA considers all potential impacts of the Proposed Action, associated project alternatives, and the No Action Alternative. The EA also considers cumulative environmental impacts with other projects in the Region of Influence.

PROPOSED ACTION/ALTERNATIVES

Section 2.3 of the EA provides a detailed description of the Proposed Action and associated alternatives. All 13 proposed projects have a Preferred Alternative and a No Action Alternative, and some projects have one or more alternatives to the Preferred Alternative. A summary of project components is provided in the following table:

Components of Projects Included in the Proposed Action

Project Name	Project Type	Project ID/Alternatives	Approximate Size	Planned Activity Fiscal Year
Upgrade Intelligence Facility	Facility Construction	A01 (Preferred)	2,200 square feet	2021
		A01-1		
Connect Rambo Gate Search Facility to Water Distribution Branch Line	Infrastructure Construction	OM01 (Preferred)	1,100 linear feet	2022
Construct Potable Water Intertie to City of Spokane	Infrastructure Construction	OM02 (Preferred)	2,700 linear feet	2022
Construct Covered Refueler Parking	Renovation	OM03 (Preferred)	n/a	2023

Components of Projects Included in the Proposed Action

Project Name	Project Type	Project ID/Alternatives	Approximate Size	Planned Activity Fiscal Year
Construct Pull-through Airfield Parking Spots	Infrastructure Construction	OM04 (Preferred)	570,000 square feet	2023
Construct New Hydrant Refueling System	Infrastructure Construction	OM05 (Preferred)	36,000 square feet	2023
Demolish Building 1012	Demolition	OM06 (Preferred)	70,000 square feet	2022
Renovate Logistics Building	Facility Construction	T01 (Preferred)	4,000 square feet	2020
		T01-1	n/a	
Construct Water Survival Training Facility	Facility Construction	T02 (Preferred)	95,000 square feet	2021
		T02-1	72,250 square feet	
Add/Alter Thorpe and Rambo Road Gate	Facility and Infrastructure Construction	M01 (Preferred)	30,000 square feet	2021
Construct Entomology Facility	Facility Construction	M02 (Preferred)	6,400 square feet	2020
Demolish Underground Storage Tanks and Oil-Water Separators	Demolition	MD01 (Preferred)	2,000 square feet	2021
Munitions Storage Area and Pad 5 Drop Zone Electrical Underground	Infrastructure	MD02 (Preferred)	6,649 linear feet	2022

Notes:
n/a = project occurs within an existing footprint.

Depending on projects selected and implemented, ground disturbance and site preparation for demolition, new construction, and infrastructure improvements would affect up to approximately 23.5 acres throughout Fairchild AFB.

NO ACTION ALTERNATIVE

Each specific project under the Proposed Action has an associated No Action Alternative, under which the specific project would not be implemented. In such cases, new facilities and infrastructure would not be constructed, buildings and other features would not be demolished, and personnel would continue to use existing facilities and infrastructure.

SUMMARY OF FINDINGS

The analyses of the affected environment and environmental consequences of implementing the Preferred Alternative for each proposed project presented in the EA concluded that by implementing standing environmental protection measures and operational planning, the Air Force would be in compliance with all terms and conditions and reporting requirements.

The Air Force has concluded that no significant adverse effects would result to the following resource areas: land use, noise, air quality, water resources, safety and occupational health, hazardous materials and wastes, biological resources, cultural resources, earth resources, socioeconomics, environmental justice, or infrastructure. No significant adverse cumulative impacts would result from activities associated with any of the proposed projects when considered together and with other past, present, or reasonably foreseeable future actions on Fairchild AFB or the larger Region of Influence for pertinent resource areas.

Resources for which significant adverse effects would be avoided, mitigated, or compensated for include the following:

Water Resources (EA Section 4.5). Adherence to standard procedures for equipment maintenance, secondary containment, and storage of potentially hazardous materials; and project-specific best management practices (BMPs) to reduce the risk of spills and leaks would minimize the potential for adverse effects to groundwater and surface water resources. Following a Stormwater Pollution Prevention Plan and the requirements of a National Pollutant Discharge Elimination System (NPDES) General Permit during construction would minimize the potential for adverse effects associated with erosion and sedimentation into surface waters and wetlands. Project design of the new impervious developments would include stormwater features and would be required to maintain or restore predevelopment hydrology to the maximum extent practicable.

For Project MD02, the route of underground electrical lines has been designed to avoid wetlands, based on current mapping. However, work would be conducted adjacent to wetlands, and wetlands would be temporarily disturbed during demolition of the existing overhead lines, with a long-term benefit associated with removal of poles from wetlands. All other proposed projects have also been planned to avoid wetlands, although each project within close proximity to wetlands will be further evaluated during design and previous wetland delineations confirmed if necessary.

For all projects, Fairchild AFB would implement institutional management requirements that minimize impacts to wetlands, and would meet all regulatory and agency requirements, including any necessary mitigation for impacts to wetlands and wetland buffers.

Hazardous Materials/Waste (EA Section 4.7). Proposed projects have been designed to avoid Environmental Restoration Program (ERP) sites. Several proposed projects overlap or are located adjacent to ERP sites, but would not disturb or interfere with cleanup actions at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites or result in a need to revise the selected remedies at these sites. All projects would be designed and constructed to avoid impacts to monitoring wells associated with CERCLA sites. At Voluntary Cleanup Program sites where fuel contamination is present, demolition/construction of projects could result in the inadvertent discovery of soil and groundwater contamination. Should fuel-contaminated soil or groundwater be encountered, the contractor would stop work, report the discovery, and implement appropriate safety measures. Commencement of field activities would not continue until the issue is investigated and resolved.

Biological Resources (EA Section 4.8). Most proposed projects would occur in areas unlikely to be used by sensitive species, although potentially suitable nesting or breeding habitat may be present in some project locations. In order to determine whether sensitive species occur in proposed work areas, Fairchild AFB would survey potential habitats to obtain information about presence. To avoid or minimize impacts, project work would be timed to avoid critical breeding/nesting periods, and avoid injury and disturbance of these species to the extent feasible. Similar measures to avoid or minimize adverse effects to migratory birds would also be implemented, as feasible. The proposed projects are not likely to impact sensitive plant species.

Earth Resources (EA Section 4.10). Under a Construction General Stormwater Permit, Fairchild AFB would implement BMPs as part of an Erosion, Sedimentation, and Pollution Control Plan that would

reduce soil compaction, loss of soil productivity, and the risk of soil loss through erosion in disturbed areas. Implementation of standard environmental protection measures would minimize the risk of soil contamination associated with spills or releases from construction equipment.

STAKEHOLDER INVOLVEMENT

Based on the description of the Proposed Action as set forth in the EA, all activities were found to comply with the criteria or standards of environmental quality and were coordinated with the appropriate federal, state, and local agencies. The attached EA and this FONSI will be made available to the public for a 30-day comment period. Comments will be incorporated into the analysis of potential environmental impacts performed as part of the EA as appropriate.

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, CEQ Regulations, and 32 CFR Part 989, I conclude that implementation of the projects identified in the EA would not have a significant environmental impact, either by itself or cumulatively with other known projects. Accordingly, an Environmental Impact Statement is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

_____ _____

Ronald R. Daniels, Deputy Base Civil Engineer Date

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

°F	Degrees Fahrenheit
µg/m^3	Micrograms per cubic meter
92 ARW	92nd Air Refueling Wing
ACAM	Air Conformity Applicability Model
ACM	Asbestos-containing material
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational Safety and Health
AICUZ	Air Installation Compatible Use Zone
ANSI	American National Standards Institute
AOZ	Airport Overlay Zone
APE	Area of Potential Effect
AST	Aboveground Storage Tank
AT/FP	Antiterrorism/Force Protection
BGEPA	Bald and Golden Eagle Protection Act
bgs	Below ground surface
BMP	Best management practice
BTEX	benzene, toluene, ethylbenzene and xylene
CAIS	Chemical Agent Identification Sets
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO_2e	Carbon dioxide equivalent
CPP	Comprehensive Planning Process
CTC	Carbon tetrachloride
CUL	Cleanup Level
CWA	Clean Water Act
CZ	Clear zone
dB	Decibels
dB(A)	A-weighted decibels
DNL	Day-Night Level
DoD	Department of Defense
DoDI	Department of Defense Instruction
DRO	Diesel Range Organic
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive safety quantity-distance
FFA	Federal Facility Agreement
FPPA	Farmland Protection Policy Act
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FS	Feasibility study
FY	Fiscal year
GHG	Greenhouse gas
GIS	Geographic information systems
gpd	Gallons per day
GRO	Gasoline Range Organic
GWP	Global warming potential
HAZWOPER	Hazardous Waste, Operations, and Emergency Response
HO	Heavy oil
hp	Horsepower
HQ AMC	Headquarters Air Mobility Command
HVAC	Heating, ventilation, and air conditioning
Hz	Hertz
I-90	Interstate 90
IDP	Installation Development Plan
INRMP	Integrated Natural Resources Management Plan
IPCC	Intergovernmental Panel on Climate Change
JLUS	Joint Land Use Study
JP-8	Jet propellant-8
kV	Kilovolt
kVA	Kilovolt-ampere
L_{Amax}	Maximum sound level
L_{Aeq}	Equivalent sound level
LBP	Lead-based paint
LUC	Land use control
MBTA	Migratory Bird Treaty Act
MDL	Method detection limit
mgd	Million gallons per day
MMT	Million metric tons
MOA	Memorandum of Agreement
MRO	Mineral range organic
MSA	Munitions Storage Area
MTCA	Model Toxics Control Act

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

MW	Megawatts
MWR	Morale, Welfare, and Recreation
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	Nitrogen dioxide
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	Ozone
OSHA	Occupational Safety and Health Administration
OWS	Oil-water separator
PAH	Polycyclic aromatic hydrocarbon
PAL	Preventive Action Limit
Pb	Lead
PCB	Polychlorinated biphenyl
pCi/L	Picocuries per liter
PCS	Petroleum-contaminated soil
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
PM_{10}	Particulate matter less than 10 microns in diameter
PPE	Personal protective equipment
ppb	parts per billion
ppm	parts per million
RC	Response complete
RCRA	Resource Conservation and Recovery Act
RI	Remedial investigation
RIP	Response in place
ROI	Region of influence
Route 2	United States Highway 2
SC	Site closed/closure
SCI	Sensitive Compartmented Information
SCIF	Sensitive Compartmented Information Facility
SDB	Sludge drying bed
SDWA	Safe Drinking Water Act
SERE	Survival, Evasion, Resistance, and Escape
SHPO	State Historic Preservation Officer
SO_2	Sulfur dioxide
SRCAA	Spokane Regional Clean Air Agency

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

SRTC	Spokane Regional Transportation Council
SWPPP	Stormwater Pollution Prevention Plan
TCE	Trichloroethylene
TCP	Traditional Cultural Property
TPH	Total petroleum hydrocarbons
TPH-D	Total petroleum hydrocarbons-diesel
TPH-G	Total petroleum hydrocarbons-gasoline
TPH-O	Total petroleum hydrocarbons-oil
UFC	Unified Facilities Criteria
USAF	United States Air Force
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UXO	Unexploded ordnance
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compounds
WAC	Washington Administrative Code
WDNR	Washington Department of Natural Resources
WWTP	Wastewater Treatment Plant

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The 92nd Air Refueling Wing (92 ARW) at Fairchild Air Force Base (AFB), Washington, and Headquarters Air Mobility Command (HQ AMC) have identified and programmed priorities for installation development projects and propose to implement them over the next four years (fiscal year [FY] 2020–FY 2023). This Environmental Assessment (EA) was prepared to evaluate the potential environmental impacts of these proposed projects in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [USC] Section 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [CFR] 1500-1508), the Air Force Environmental Impact Analysis Process (EIAP) regulations at 32 CFR Part 989, and Air Force Instruction (AFI) 32-7061 (Secretary of the Air Force 2003).

Fairchild AFB is located in the east-central portion of Washington State in Spokane County, approximately 12 miles from the City of Spokane, and occupies 4,551 acres of land (Figure 1.1-1). It was established in 1942 as the Spokane Army Air Depot, and has hosted a variety of missions and aircraft types throughout its history. Fairchild AFB is home to the 92 ARW and supports other United States Air Force (USAF) missions, including USAF Survival, Evasion, Resistance, and Escape (SERE) School; Washington Air National Guard; Armed Forces Reserve Center; the Joint Personnel Recovery Agency; medical detachments; and others. Currently, 48 Boeing KC-135 Stratotanker aerial refueling aircraft operate from Fairchild AFB.

The intent of the 92 ARW and HQ AMC is to streamline NEPA compliance and facilitate the installation development process by evaluating in one integrated document the potential impacts on the human environment of the projects proposed for execution at Fairchild AFB. These projects are presented in Section 1.4.

The information presented in this document will serve as the basis for deciding whether the proposed actions would result in a significant impact to the human environment, requiring the preparation of an Environmental Impact Statement (EIS), or whether no significant impacts would occur, in which case a Finding of No Significant Impact (FONSI) would be appropriate.

Purpose and Need

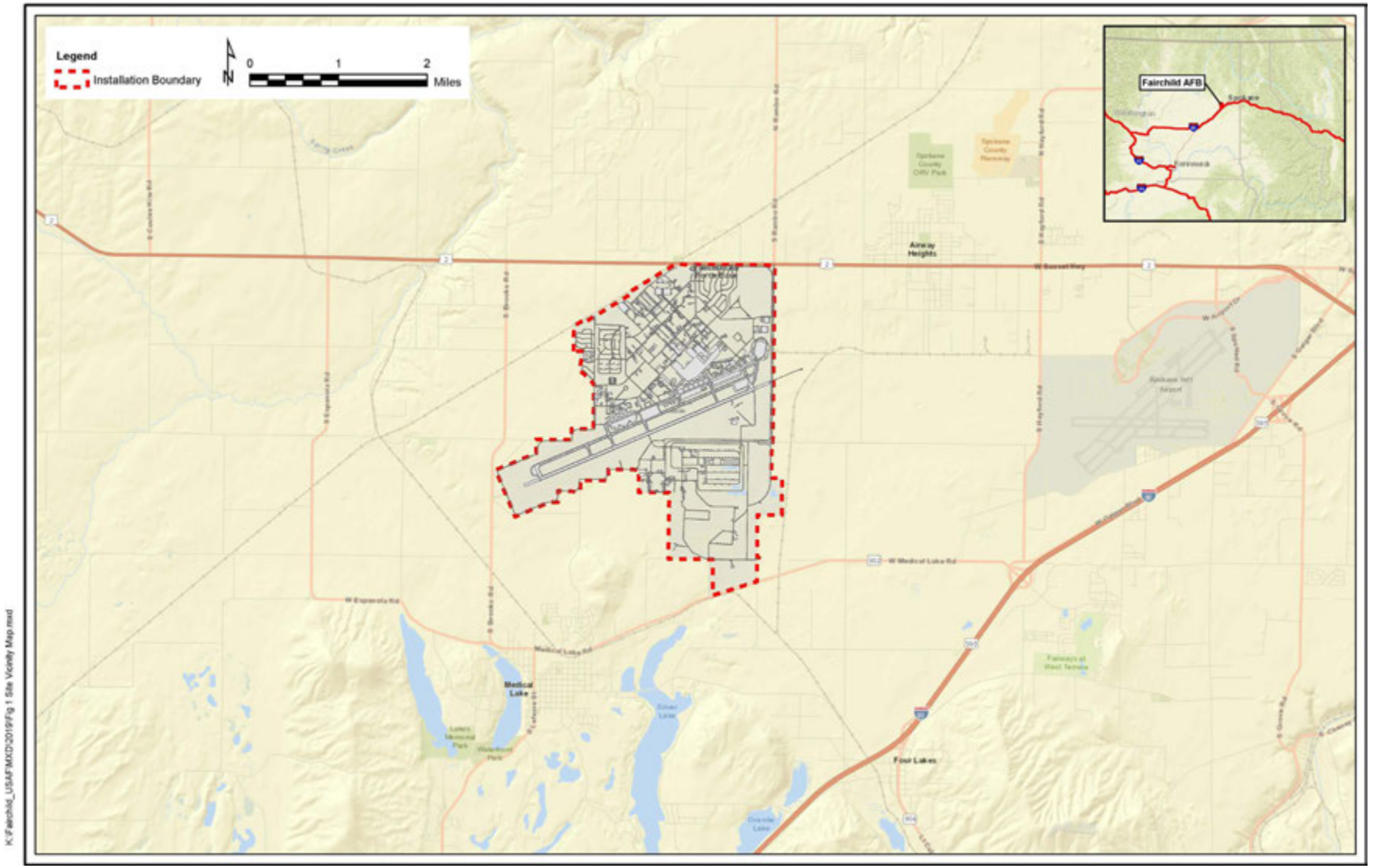

Figure 1.1-1: Location of Fairchild AFB

1.2 BACKGROUND

Installation development at Fairchild AFB is completed in accordance with the USAF Comprehensive Planning Program established in AFI 32-7062, *Comprehensive Planning*. Comprehensive Planning establishes a systematic framework for informing decision-making on the physical development of Air Force installations and their environment. The objective of the Comprehensive Planning Process (CPP) is to synthesize data and information to enable commanders to make effective development decisions affecting their installation and the surrounding community. As a part of the CPP, installations are divided into identifiable planning districts based on geographical features, land use patterns, building types, and/or transportation networks. Within these planning districts the Base Community Planner identifies shortfalls in the existing capability, capacity, or relationship of installation resources with respect to their contribution to successful accomplishment of installation missions. A thorough analysis of the existing conditions, a study of the requirements, and the vision, goals, and objectives of the installation allow the development of conceptual alternatives. These alternatives are evaluated against measurable criteria/selection standards and evaluated during the EIAP. Planning activities required by CPP integrate EIAP processes to ensure planning decisions reflect environmental values, identify alternatives to be considered, and document the rationale for alternatives eliminated from further consideration.

1.3 PURPOSE AND NEED

Implementing installation development projects at Fairchild AFB would provide infrastructure and functionality improvements necessary to support the mission of the 92 ARW and tenant units.

Installation development at Fairchild AFB would address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. These deficiencies are remedied through an ongoing process of construction of new facilities and infrastructure, renovation of existing facilities, and demolition of redundant or obsolete facilities. Installation development is required to allow the 92 ARW and its tenant units to successfully complete their missions.

Installation development projects must be developed in a manner that:

- Supports the Air Force mission requirements and quality of life of units and Airmen hosted by the installation;
- Meets all applicable U.S. Department of Defense (DoD), federal, state, and local laws and regulations, such as but not limited to the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Clean Water Act (CWA), Clean Air Act, Resource Conservation and Recovery Act (RCRA), and Migratory Bird Treaty Act (MBTA). More detailed information regarding resource-specific laws and regulations is provided in the specific resource sections located in Chapter 3;
- Aligns with the 2011 Air Force Civil Engineering Strategic Plan (USAF 2011);
- Provides reliable utilities and an efficient transportation system to support Fairchild AFB and meets current USAF requirements for functional space, consistent with Air Force Manual 32-1084, *Facility Requirements* (26 February 2016);
- Meets applicable DoD antiterrorism/force protection (AT/FP) criteria, consistent with United Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings and the Air Force Installation Force Protection Guide*;

Purpose and Need

- Reduces the consumption of fuel, energy, water, and other resources; maximizes the use of existing facilities; and reduces the footprint of unnecessary or redundant facilities and infrastructure in accordance with EO 13693, *Planning for Federal Sustainability in the Next Decade, and the Energy Policy Act of 2005*;
- Supports and enhances the morale and welfare of personnel assigned to the installation, their families, and civilian staff, consistent with U.S. Department of Defense Instruction (DoDI) 1015.10, *Military Morale, Welfare, and Recreation (MWR) Programs* (6 July 2009).

1.4 PROJECTS IDENTIFIED FOR INSTALLATION DEVELOPMENT

Fairchild AFB has identified and programmed 13 individual projects throughout six (6) planning districts for various improvement projects throughout the installation. Many of the projects are related to space or mission optimization and/or consolidation. Table 1.4-1 provides a list of projects identified and programmed for implementation within the next four (4) years.

Table 1.4-1: Projects Identified for Installation Development

Project ID	Project Name	Project Description	Approximate Implementation Year
Administrative District			
A01	Upgrade Intelligence Facility	Add two new classified briefing rooms and three offices to house tactics office, mission planning area, and classified space, built to a Sensitive Compartmented Information (SCI) level of security.	FY 2021
Operations and Maintenance District			
OM01	Connect Rambo Gate Search Facility to Water Distribution Branch Line	Extend a 6-inch water main by approximately 1,100 feet to connect to Rambo Road Commercial Gate's vehicle inspection facility (Building 2102).	FY 2022
OM02	Construct Potable Water Intertie to City of Spokane Water System	Construct an approximately 2,700-foot-long intertie with City of Spokane water system, from an existing pipe that ends at McFarlane/Rambo roads.	FY 2022
OM03	Construct Covered Refueler Parking	Construct a covered parking facility for refueler trucks.	FY 2023
OM04	Construct Pull-through Airfield Parking Spots	Create pull-through parking from Taxiway Echo to 50s apron. Remove existing pavement, replace with new Portland concrete cement, and create pull-through parking from Taxiway Papa to taxi-lane Juliet (Spots 20 through 28 and 51 through 55).	FY 2023
OM05	Construct New Hydrant Refueling System	Construct a new hydrant refueling system for aircraft, encompassing spots 29 through 45.	FY 2023
OM06	Demolish Building 1012	Demolish an existing structure (fuel cell hangar) and remove pavement.	FY 2022

Table 1.4-1: Projects Identified for Installation Development

Project ID	Project Name	Project Description	Approximate Implementation Year
Training District			
T01	Renovate Logistics Building	Construct an approximately 4,000-square-foot addition to the SERE Logistics Facility for gear maintenance, drying, and storage.	FY 2020
T02	Construct Water Survival Training Facility	Construct a purpose-built Water Survival Training facility, located on the SERE campus, with capabilities to support increased eject/no-eject aircraft survival training.	FY 2021
Munitions District			
M01	Add/Alter Thorpe and Rambo Road Gate	Modify the existing Thorpe and Rambo Gate to accommodate more vehicular traffic and two-way traffic flow with traffic calming and final denial barriers. Install permanent identification check station and over-watch station.	FY 2021
M02	Construct Entomology Facility	Construct new entomology facility to meet current standards. Facility to be located near Building 1409.	FY 2020
Multi-District			
MD01	Demolish Underground Storage Tanks (USTs) and Oil-Water Separators (OWSs)	Demolish USTs associated with Buildings 1005, 1012, 1019, 1039, 1204, 1249, 1258, 2025, 2045, 2071, and 2319; and OWSs associated with Buildings 1012 and 2319.	FY 2021
MD02	Munitions Storage Area (MSA) and Pad 5 Drop Zone Electrical Underground	Convert the MSA and Drop Zone overhead electrical system to an underground system (in Munitions and Training Districts).	FY 2022

1.5 ENVIRONMENTAL ANALYSIS APPROACH FOR THE INSTALLATION DEVELOPMENT PLAN (IDP)

To effectively manage the complexity and volume of installation development projects needed on Fairchild AFB, the Air Force plans to use this EA as a baseline environmental analysis for future projects that are similar in scope to those analyzed in this EA. Any additional projects or future activities proposed on areas associated with the installation must be evaluated on their own merit under the USAF EIAP guidelines to determine their environmental impacts and appropriate level of NEPA analysis required.

1.6 PURPOSE OF AND NEED FOR INDIVIDUAL PROPOSED ACTIONS

Each of the proposed actions included in the EA has a specific purpose and need, as presented in Table 1.6-1.

Table 1.6-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Project Purpose	Need
Administrative District			
A01	Upgrade Intelligence Facility	The purpose of the proposed action is to provide adequate space for classified briefing, training, and certification activities.	This action is needed because the existing facility was not designed for the current mission, which limits the ability to optimize the existing space.
Operations and Maintenance District			
OM01	Connect Rambo Gate Search Facility to Water Distribution Branch Line	The purpose of the proposed action is to provide more reliable water pressure at Building 2012.	This action is needed because periodic reductions in water pressure could impact the performance of the fire suppression system.
OM02	Construct Potable Water Intertie to City of Spokane Water System	The purpose of the proposed action is to provide an additional point of entry for the water system.	This action is needed because with only one point of entry for the water supply system, damage to the existing intertie or closure for maintenance could impact the installation's water supply.
OM03	Construct Covered Refueler Parking	The purpose of the proposed action is to provide parked refueler trucks with protection from inclement weather.	This action is needed because refueler trucks are exposed to snow and other weather conditions that can damage the equipment and shorten the lifespan of the vehicles.
OM04	Construct Pull-through Airfield Parking Spots	The purpose of the proposed action is to increase the efficiency of airfield operations by eliminating the need for maintenance staff to tow aircraft.	This action is needed to accommodate a new squadron and for long-term efficiency, as identified by the Site Activation Task Force.
OM05	Construct New Hydrant Refueling System	The purpose of the proposed action is to increase the efficiency of refueling operations at the south end of the flightline.	The action is needed to accommodate a new squadron.
OM06	Demolish Building 1012	The purpose of the proposed action is to remove an airfield building that is no longer needed.	The project is needed because the building is an airfield obstruction, and if left in place would continue to contribute to the installation's square footage allocation.

Table 1.6-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Project Purpose	Need
Training District			
T01	Renovate Logistics Building	The purpose of the proposed action is to provide adequate warehouse space to allow the SERE School to maintain and effectively dry survival gear used in training.	The project is needed because there is not enough warehouse space to conduct maintenance on gear or to properly dry items that return from the field saturated. Adequate gear maintenance and processing space is needed to ensure courses are kept on schedule, students have serviceable training gear, and asset accountability is maintained.
T02	Construct Water Survival Training Facility	The purpose of the proposed action is to provide adequate facilities to support SERE Water Survival Training courses.	This action is needed because the pool currently being used for Water Survival Training is shared with MWR and is not a sufficient size to effectively perform the required training. There is also not adequate classroom space.
Munitions District			
M01	Add/Alter Thorpe and Rambo Road Gate	The purpose of the proposed action is to provide an alternate full-use gate that accommodates two-way traffic and has extended operational hours.	The project is needed because the current gate does not have adequate infrastructure for future operations and is not compliant with applicable standards, and because of traffic congestion issues and associated future safety hazards at the main gate.
M02	Construct Entomology Facility	The purpose of the proposed action is to provide an entomology facility for pest management operations that allows for safe storage of pesticides to applicable standards.	This project is needed because the current facility is vastly undersized, with inadequate storage facilities and office space, and no mixing room, posing health and safety risks. Pesticides are currently stored in a shared facility, in violation of applicable guidance.
Multi-District			
MD01	Demolish USTs and OWSs	The purpose of the proposed action is to decommission diesel fuel storage tanks and oil-water separators that are no longer needed.	This project is needed because unused USTs and OWSs are risks for environmental contamination.

Table 1.6-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Project Purpose	Need
MD02	MSA and Pad 5 Drop Zone Electrical Underground	The purpose of the proposed action is to convert existing overhead electrical lines to an underground system	The project is needed because overhead lines have a greater risk for outages and require greater maintenance man hours than underground lines.

1.7 INTERAGENCY/INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

1.7.1 Interagency Coordination and Consultations

EO 12372, *Intergovernmental Review of Federal Programs*, as amended by EO 12416 with the same title, requires federal agencies to provide opportunities for consultation with officials of state and local governments that could be affected by a federal proposal. Per the requirements of the Intergovernmental Cooperation Act of 1968 (42 USC Section 4231(a)) and EO 12372, Fairchild AFB notifies relevant federal, state, and local agencies of a proposed action and alternatives through the interagency and intergovernmental coordination process and provides them with sufficient time to make known their environmental concerns. The process also provides the Fairchild AFB with the opportunity to cooperate with and consider state and local views in implementing the federal proposal.

The Draft EA and Draft FONSI are made available to relevant federal, state, and local government agencies for a 30-day review. Chapter 6 contains the list of agencies consulted during this analysis and copies of correspondence. Government agency comments are considered in the development of the Final EA and prior to a decision being made on whether or not to sign the FONSI and proceed with the Proposed Action or its alternatives.

1.7.2 Government-to-Government Consultations

Consistent with DoDI 4710.02, *Interactions with Federally Recognized Tribes*, and AFI 90-2002, *Air Force Interaction with Federally Recognized Tribes*, federally recognized Tribes that are historically affiliated with the Fairchild AFB geographic region have been invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the Tribes. The Tribal consultation process is distinct from NEPA consultation or the interagency coordination process, and it requires separate notification of all relevant Tribes. The timelines for Tribal consultation are also distinct from those of other consultations. The Fairchild AFB point of contact for Native American Tribes is the Installation Tribal Liaison Officer. The Native American tribal governments that will be coordinated or consulted with regarding these actions are listed in Chapter 6. Appendix A provides Fairchild AFB correspondence.

1.7.3 Other Agency Consultations

Per the requirements of Section 106 of the NHPA and implementing regulations (36 CFR Part 800), Section 7 of the ESA and implementing regulations, findings of effect and request for concurrence will be transmitted to the Washington State Historic Preservation Officer (SHPO) and the U.S. Fish and Wildlife Service (USFWS). Consultation will occur on a per project basis at a time when the project design has advanced to a stage to adequately account for potential effects. For projects that involve potential impacts to the installation's National Register of Historic Places (NRHP)-eligible historic properties—Buildings 2025, 2245, and 2050—consultation with the SHPO will occur when project is at the 25 to 33 percent design stage.

1.8 PUBLIC AND AGENCY REVIEW OF EA

A Notice of Availability (NOA) of the Draft EA and FONSI was published in the Spokesman-Review, announcing the availability of the EA for review on 4 March 2020. The NOA invited the public to review and comment on the Draft EA. The public and agency review period will end on 3 April 2020. The NOA is provided in Appendix B.

Copies of the Draft EA and FONSI have been made available for review at the following locations:

Airway Heights Library 1213 South Lundstrom St. Airway Heights, WA 99001	Spokane Public Library 906 West Main Ave. Spokane, WA 99201	Fairchild AFB Library 2 West Castle St. Fairchild AFB, WA 99011

1.9 DECISION TO BE MADE

The EA evaluates whether the Proposed Action would result in significant impacts on the human environment. If significant impacts are identified, Fairchild AFB would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the Proposed Action, or abandon the Proposed Action.

This EA is a planning and decision-making tool that will be used to guide Fairchild AFB in implementing the Proposed Action in a manner consistent with Air Force standards for environmental stewardship.

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

This EA evaluates the potential environmental impacts that may arise from the implementation of the 13 projects programmed as approved installation development priorities for the next four (4) years (FY 2020–FY 2023) at Fairchild AFB. This document treats each project as a discrete proposed action, and evaluates each project and its alternatives separately. These projects are categorized within six (6) planning districts outlined in the CPP.

2.2 SELECTION STANDARDS FOR PROJECT ALTERNATIVES

The scope and location of each proposed action (Figure 2.2-1 and Figure 2.2-2) and, where applicable, their alternatives, have undergone extensive review by 92 ARW Civil Engineering Squadron personnel and supporting installation and Air Force staff specialists. Developing the Proposed Action and potential alternatives is a critical component of the planning process. NEPA requires consideration of various alternatives to minimize adverse impacts on the environment. Evaluation of multiple options in the planning process allows the viable alternatives to be carried forward. Planners review functional and spatial relationship concepts, current facility locations, environmental conditions, and the existing on-base environment. This analysis supports the NEPA process by considering several alternatives and evaluating their viability.

Potential alternatives to the proposed actions were each evaluated based on three universal selection standards, which were applied to all alternatives. Each project description, beginning in Section 2.3, provides details regarding how these universal selection standards apply to specific project requirements.

Standard 1: *Planning Constraints*—Planning constraints are human-made or natural elements that can create significant limitations to the operation or construction of buildings, roadways, utility systems, airfields, training ranges, and other facilities. These constraints, when considered collectively with the installation's capacity opportunities, inform the identification of potential areas for development, as well as those areas that can be redeveloped to support growth. This standard addresses compatibility with installation operational aspects, natural and built resources, and land use compatibility, and largely dictates the location/placement of a proposed facility.

- *Operational*—Operational constraints are generally related to flying and maintaining aircraft; storing fuel, munitions, and other potentially hazardous cargo; and operating training ranges or fulfilling similar operational requirements that can limit future development activity. At Fairchild AFB, operational constraints include, but are not limited to, airfield clearance and safety zones, noise contours, explosive safety quantity-distance zones, and antiterrorism force protection.
- *Natural*—Natural constraints include environmental and cultural resources at Fairchild AFB. These provide positive aesthetic, social, cultural, and recreational attributes that substantially contribute to the overall quality of life on base.
- *Built*—Built constraints are related to the condition, functionality, or effectiveness of infrastructure systems, facilities, and other human-made improvements.
- *Land Use Compatibility*—Land use compatibility constraints are associated with land use designations (e.g., airfield, administrative, recreation, etc.) on the installation and ensuring that planning considerations account for compatibility between proposed and existing uses (e.g., recreational use may not be compatible with the airfield). Land use compatibility constraints are also associated with Environmental Restoration Program (ERP) sites, which may have established land use controls (LUCs) that limit development in these areas.

Description of the Proposed Action and Alternatives

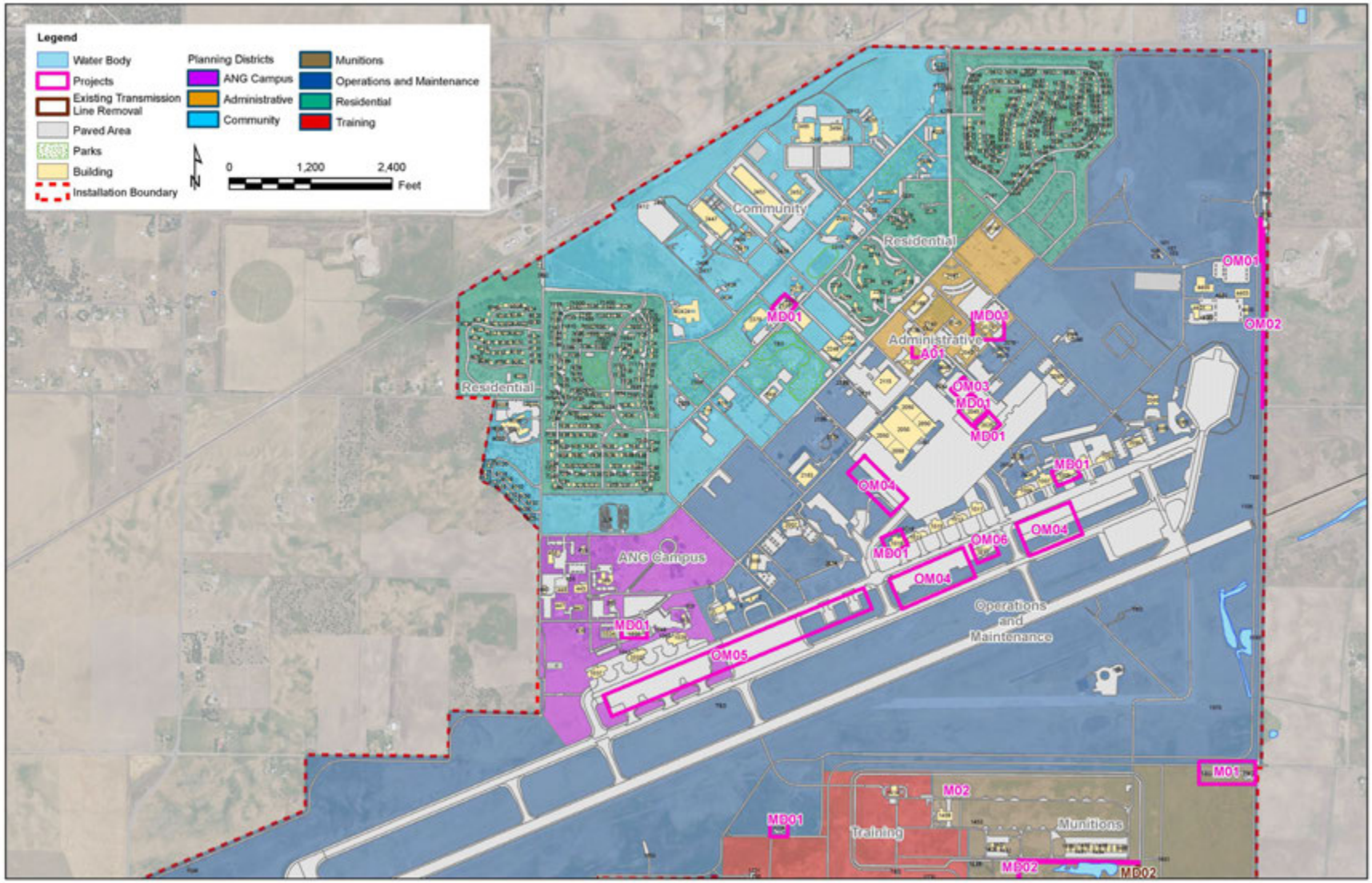

Figure 2.2-1: Location on Fairchild AFB of Projects Included in the Proposed Action (North)

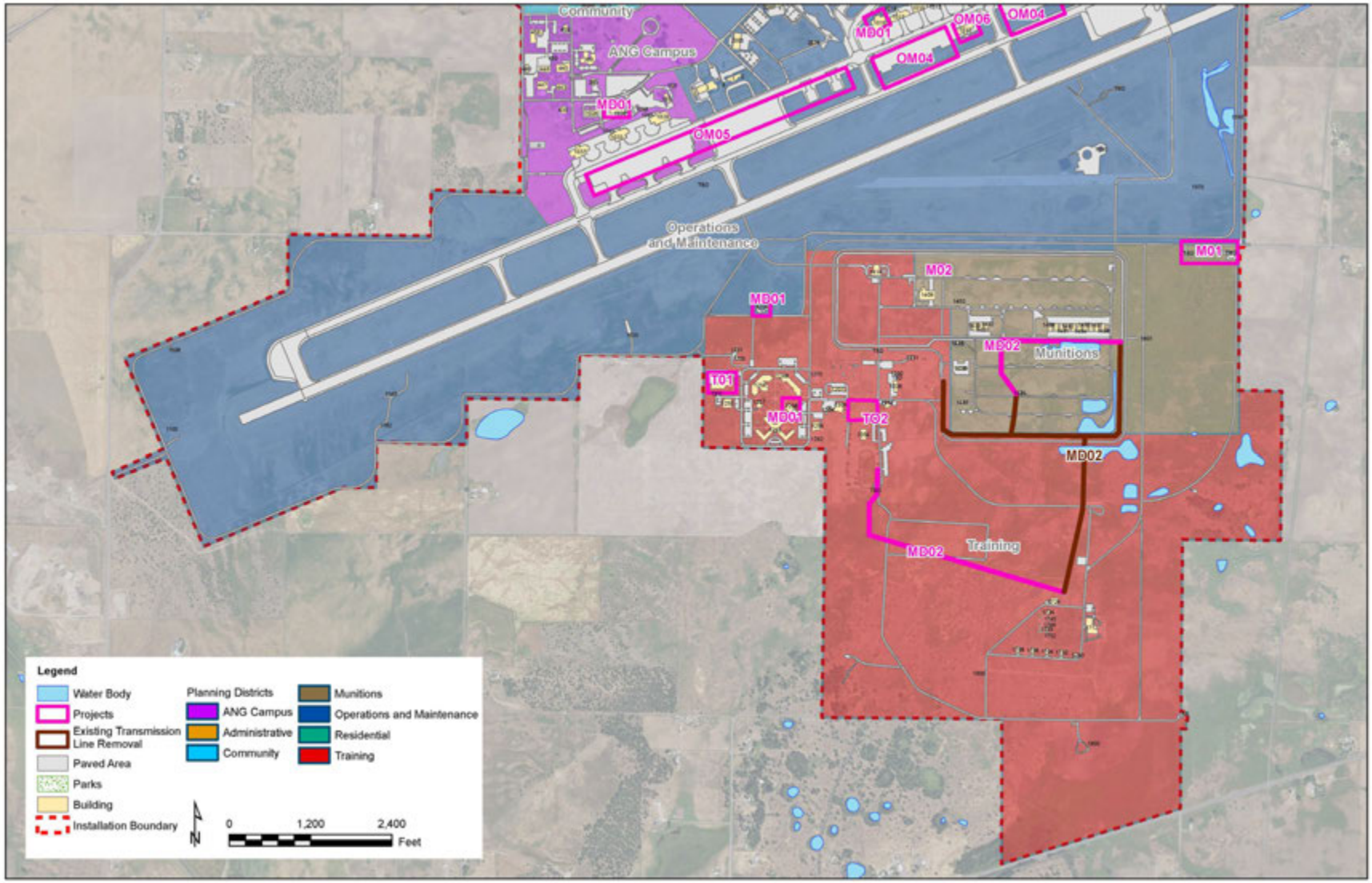

Figure 2.2-2: Location on Fairchild AFB of Projects Included in the Proposed Action (South)

Standard 2: ***Installation Capacity Opportunities***—This refers to the capabilities of the installation's existing facilities/infrastructure to meet existing and future mission needs. This standard largely drives the scope of the facility/infrastructure development and/or improvement and requires that proposed facility/infrastructure development and improvements support the following aspects:

- Mission operations, mission support, built infrastructure, quality of life

Standard 3: ***Sustainability Development Indicators***—This refers to the ability to operate into the future without a decline in either the mission or the natural and human-made systems that support it, creating sustainable installations. Sustainability is a holistic approach to asset management that seeks to minimize the negative impacts of the USAF's mission and operations on the environment. This standard also generally drives the scope of the facility/infrastructure development and/or improvement and supports sustainability of the installation through consideration of the following:

- Energy, water, waste water, air quality, facilities space optimization, encroachment, airfields, natural/cultural resources

2.3 PROPOSED ACTIONS AND ALTERNATIVES

The NEPA and CEQ regulations mandate the consideration of reasonable alternatives to the proposed actions. "Reasonable alternatives" are those that also could be utilized to meet the purpose of and need for each proposed action.

The NEPA process is intended to support flexible, informed decision-making; the analysis provided by this EA and feedback from the public and other agencies will inform decisions made about whether, when, and how to execute the proposed actions. Among the alternatives evaluated for each project is a No Action Alternative. The No Action Alternative will substantively analyze the consequences of not undertaking the proposed action, not simply conclude no impact, and will serve to establish a comparative baseline for analysis.

The scope, location, and objectives of the proposed actions are described here, grouped by planning district. This section also presents reasonable and practicable alternatives for projects where multiple viable courses of action exist. Those alternatives are assessed relative to the selection standards and project-specific selection standards, where applicable. Alternatives that met all three selection standards were considered reasonable and retained for consideration in this EA. Alternatives that did not meet one or more of the standards were considered unreasonable and are not retained for consideration in the EA.

2.3.1 Administrative Planning District

Project A01: Upgrade Intelligence Facility (Building 2125)

The proposed action is to provide an additional 1,700 to 2,200 usable square feet of briefing/training/ certification space, built to an SCI level of security, for classified briefings.

Selection Standard Applicability: The site must be within the immediate vicinity of the existing facility, as personnel that manage the flight simulators must be able to reach all simulators by foot (Selection Standard 2). The facility must be made to meet SCI facility (SCIF) security requirements (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis*:* Renovation of the existing facility to provide the necessary classified briefing space was eliminated from further analysis because it does not meet Selection Standard 1 due to built resource constraints. The existing layout of Building 2125 (location of load-bearing columns, staggered floor heights, oversized mechanical room, and electromagnetic pulse hardened room) is not conducive to renovation and would require the building's interior to be completely rebuilt. Allocation of additional square footage in each of the four squadron

operations buildings was eliminated from further analysis because it does not meet Selection Standard 3 due to facilities space optimization issues. Decentralizing the briefings into four different locations would not be an effective use of space and would require more manpower to complete the required briefings/training/certification.

Alternatives Considered for this Project

Alternative A01 (Preferred Alternative): This alternative would include construction of 1,700 square feet of usable space (two classified briefing rooms, three offices to house the tactics office, a mission planning area, and classified space), plus 500 square feet for a mechanical room (if needed) on the southwest side of Building 2125. The new usable space would be built to an SCIF level of security, in accordance with UFC 4-010-05. The building addition would be a stand-alone addition with its own mechanical systems. Limited renovation of interior space would occur under this alternative. New electrical and heating, ventilation, and air conditioning (HVAC) equipment may be required due to the increase in facility size. Construction would occur in FY 2021 over a period of approximately 6 months. The building addition would result in a total increase in impervious surface of up to 2,200 square feet. The total permanent disturbance area would be 2,200 square feet and the temporary disturbance area would be approximately 440 square feet.

Alternative A01-1: This alternative would locate the 1,700 to 2,200 square-foot addition on the northeast side of Building 2125. The construction timing and duration would be similar to those described for Alternative A01. The addition would be constructed in an area that is currently paved, resulting in loss of up to 2,200 square feet of the building's parking lot. No new impervious surface would be introduced as a result of this alternative. This alternative would temporarily impact 2,200 square feet of already paved area. There would be no new permanent impact area.

Alternative A01-2: This alternative would locate the 1,700 to 2,200 square-foot addition on the northwest side of Building 2125. The mechanical and electrical equipment currently located in this area would be removed and recycled for use at another DoD facility or for public sale, or disposed of as scrap metal. The construction timing and duration would be similar to those described for Alternative A01. The building addition would result in a total increase in impervious surface of 2,200 square feet. The total permanent disturbance area would be 2,200 square feet and the temporary disturbance area would be approximately 440 square feet.

No Action Alternative: This alternative would result in no addition of square footage or interior renovation of Building 2125. The current Squadron Operations space would be inadequate to meet briefings/trainings/certifications needs and associated mission readiness when the addition of 12 aircraft and their associated crews is considered.

2.3.2 Operations and Maintenance Planning District

Project OM01: Connect Rambo Gate Search Facility to Water Distribution Branch Line

The proposed action is to reconfigure the water system to allow the water line for Building 2102 to connect to a distribution line rather than the main line.

Selection Standard Applicability: The pipeline should be compatible with the installation's existing water distribution network (Selection Standard 1). The route selected for the new pipeline should minimize impacts to roadways and pavements (Selection Standard 1). The route for the line should be as direct from the source to the target area as possible to minimize impacts and maintain water pressure differentials (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis*:* No other alternatives were considered for this project. Only one possible configuration was identified that would meet the purpose and need.

Alternatives Considered for this Project

Alternative OM01 (Preferred Alternative): This alternative would entail the addition of approximately 1,100 feet of 6-inch water line from Building 4400 to Building 2102. Construction would occur in FY 2022 and take approximately 1.5 months to complete. Construction would consist of excavating a trench in areas that are currently paved or vegetated with grass, laying the pipeline, and then filling in and restoring the disturbed areas. The maximum depth of the trench would be 48 inches. No new impervious surface would be created. The total temporary impact area for this alternative would be 660 square feet. There would be no permanent impact area.

No Action Alternative: Under this alternative, the water line for Building 2102 would remain connected to a main water line, leading to periods of insufficient water pressure that could reduce the effectiveness of fire protection actions.

Project OM02: Construct Potable Water Intertie to City of Spokane Water System

The proposed action is to construct an additional point of entry for the installation's potable water system.

Selection Standard Applicability: The route selected for the new pipeline should minimize impacts to planning constraints such as roadways and drainage ditches (Selection Standard 1). The route for the line should be as direct from the source to the target area as possible, but must tie in from the existing water line adjacent to the base boundary (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis*:* No other alternatives were considered for this project. There is only one potable water line that is available for Fairchild AFB to tie into, and only one feasible configuration for tying into it.

Alternatives Considered for this Project

Alternative OM02 (Preferred Alternative): This alternative would connect the City of Spokane's potable water line that ends just outside Fairchild AFB, at the intersection of McFarlane Road and Rambo Road, to the installation's potable water system. The new intertie would enter the installation at McFarlane Road and extend northward along the west side of Rambo Road. The new pipeline would be 12 inches in diameter and approximately 2,700 feet in length. Construction would occur in FY 2022, and would take approximately 4 months to complete. Construction would consist of excavating a trench at a depth of 2 to 3 feet below the ground surface, laying the pipeline, and then filling in and restoring the disturbed areas to match pre-construction conditions. No new impervious surface would be created as a result of this alternative. The total temporary impact area for this alternative would be approximately 3,200 square feet. There would be no permanent impact area. During the construction period, there would be short-term and intermittent traffic diversions/lane closures on Rambo Road.

No Action Alternative: Under this alternative, there would continue to be only a single point of entry for the water system, with no additional options for water supply to the installation. Since the on-site well cannot meet water needs for a prolonged period of time, Fairchild AFB would be vulnerable in the event of damage to the single water supply system.

Project OM03: Construct Covered Refueler Parking

The proposed action is to provide a covered parking facility for 22 refueler trucks.

Selection Standard Applicability: The project must take place within the flightline fence, as the refueling trucks are used exclusively within this area (Selection Standard 1). The location of the structures cannot interfere with aircraft operations (Selection Standard 1). The compressor system must be designed to be above ground and accessible for maintenance (Selection Standard 2).

***Alternatives Considered but Eliminated from Further Analysis**:* Construction of a new building for refueler parking was considered but eliminated from further analysis because it does not meet Standard 3 due to facilities space optimization issues. Construction of a new building is not needed to meet the purpose and need. Other locations for canopy construction were considered but eliminated from further analysis because they did not meet Standard 1 due to built constraints and land use constraints. None of the other locations provided the necessary amount of space or equipment infrastructure (e.g., compressed air) to support the project purpose and need. Additionally, the refueler parking must be located in a restricted area within the airfield, where usable area is limited.

Alternatives Considered for this Project

Alternative OM03 (Preferred Alternative): This alternative would provide a canopy over an existing paved parking area adjacent to Building 2045, for 22 refueler trucks. Construction would occur in FY 2023 and would last approximately 6 months. The canopy would consist of four metal structures, one for each row of parking, each measuring 25-feet by 275-feet. Each metal structure would be oriented southwest to northeast, and would cover the existing parking spaces. The structures would consist of support columns and the canopy, and would be open on all sides to allow pull-through parking. Minor earthwork would be required within currently paved areas to install footings for the structures.

Because a compressed air system is needed to help start the trucks when temperatures are low, replacement of the existing, leaking compressed air system would be included as part of this project. The new system would be installed above ground to avoid disturbing pavement, and would be an attachment to the covered parking. It would likely be mounted to the underside of the new canopy, with drop-down reels for each parking stall. The mechanical equipment for the new compressed air system, located at the end of each parking structure, would tie into the electrical system for Building 2045. The old compressed air system would be abandoned in place, with no associated removal of equipment or ground disturbance. No new impervious surface would be created as a result of this alternative. The temporary impact area for this alternative would be negligible. There would be no permanent impact area.

No Action Alternative: Under this alternative, refueler trucks would be parked outside when not in use, in the same location as at present. This equipment would continue to be exposed to snow and other inclement weather, which may shorten its lifespan and reduce its functionality.

Project OM04: Construct Pull-through Airfield Parking Spots

The proposed action is to provide infrastructure that eliminates the need for towing aircraft into parking spots.

Selection Standard Applicability: The site must enable pull-through parking to remove the need for maintenance personnel and equipment to tow aircraft (Selection Standard 2). The site must be developed in a way to maximize efficiency of taxiing aircraft and minimize obstruction to taxiways (Selection Standard 2).

***Alternatives Considered but Eliminated from Further Analysis**:* No other alternatives were considered for this project. There is no other feasible means of eliminating towing.

Alternatives Considered for this Project

Alternative OM04 (Preferred Alternative): This alternative would provide pull-through parking for aircraft in airfield spots 20 through 30 and 51 through 55. Construction would occur in FY 2023 and would last for approximately 8 months. Construction would entail sections of new pavement, as well as demolition of existing pavement and replacement with concrete that can accommodate the weight of fully loaded aircraft. In certain areas, grading of the ground surface would occur to make it level. An existing fill stand would be demolished and replaced with a new fill stand and associated pavement and fuel line. Under this alternative there would be an increase in impervious surface of approximately

490,000 square feet. The total permanent impact area would be 490,000 square feet and the temporary impact area would be approximately 98,000 square feet.

No Action Alternative: This alternative would continue to require routine towing of aircraft into certain parking areas for fuel loading and unloading. Associated operational inefficiencies and impacts to mission readiness and response would increase as a result of future increases in the number of aircraft at Fairchild AFB.

Project OM05: Construct New Hydrant Refueling System

The proposed action is to provide an operational system for providing two-way fuel delivery to parked aircraft at the southwestern end of the flightline.

Selection Standard Applicability: The new hydrant system must be independent from the existing fuel systems to ensure system redundancy (Selection Standard 1). The new system must provide service to aircraft parking spaces on the southwestern end of the flightline (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis*:* Use of trucks to fuel and defuel was eliminated from further analysis because it does not meet Selection Standard 2, as Fairchild AFB does not have sufficient personnel and equipment resources to implement this alternative. Other locations for the project were eliminated from further analysis because they do not meet Selection Standard 1 because of built resource constraints. The alternative locations do not currently have thick enough concrete to support fully fueled aircraft and would require additional paving to implement the project.

Alternatives Considered for this Project

Alternative OM05 (Preferred Alternative): This alternative would construct a new hydrant refueling system that would serve parking spots 29, 30, and 33 through 47. A new pump house and fuel tank would be constructed directly east of hangar 1029, in an area that is currently an undeveloped field. The new tank would hold approximately 400,000 gallons of jet fuel. A new fuel line would run from Building 2401 to the new pump house. The new line would follow Wainwright Boulevard and Arnold Street back to the fuel facility, Building 2151. The pump house would require all new utilities, which would tie into existing utilities near Building 1029, 152, or 160. Construction would occur in FY 2025 and would last for approximately 8 months. The increase in impervious surface under this alternative would be approximately 36,000 square feet. The total permanent impact area would be 36,000 square feet and the temporary impact area would be approximately 7,200 square feet.

No Action Alternative: Under the No Action Alternative, fuel trucks would continue to be used to refuel aircraft parked at the south end of the apron, or aircraft would be towed to parking spots along other portions of the flightline that are tied into the existing fuel systems. Future beddown of additional aircraft could lead to reduced mission readiness and capability under this alternative.

Project OM06: Demolish Building 1012

The proposed action is to remove the fuel cell hangar (Building 1012), located in the airfield, after its function moves to Building 1007.

Selection Standard Applicability: The existing building is within the airfield obstruction area and must be modified/demolished to comply with the open space requirement (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis*:* Renovation and revitalization of the building for another use was eliminated from further analysis because it does not meet Selection Standard 1 for operational constraints, as the building is an airfield obstruction that currently requires a waiver.

Alternatives Considered for this Project

Alternative OM06 (Preferred Alternative): This alternative would demolish Building 1012, including all paved areas within the project footprint. Demolition would occur in FY 2022 and would last a duration of 2 months. Building materials and utilities would be hauled off-site. Asbestos-containing materials would be handled and disposed of in accordance with federal, state, and local standards. This alternative would result in a decrease in impervious surface of approximately 70,000 square feet. The site would be returned to a natural state that matches the surrounding areas. The total temporary impact area would be approximately 84,000 square feet.

No Action Alternative: Under the No Action Alternative, the building would remain in place but would be unused after its function relocates to Building 1007. The waiver for the airfield obstruction would remain.

2.3.3 Training Planning District

Project T01: Renovate Logistics Building

The proposed action is to provide 4,000 square feet of additional warehouse space for SERE School gear maintenance, drying, and storage.

Selection Standard Applicability: The facility must be within the immediate vicinity of Building 1249 for direct access by personnel (Selection Standard 2). The facility must meet increased facility spacing requirements resulting from uptick in mission size (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis*:* Demolition of the existing building and construction of a new facility elsewhere was eliminated from further analysis because it does not meet Standard 3 in terms of facilities space optimization and unnecessary construction.

Alternatives Considered for this Project

Alternative T01 (Preferred Alternative): This alternative would provide a 4,000-square-foot expansion to the SERE logistics facility, which would be tied directly into the west wall of Building 1249. It is expected that the building's utilities would be adequate to accommodate the expansion without a need to upgrade. Construction would occur in FY 2020 and would last a duration of 6 months. The total increase in impervious surface under this alternative would be 4,000 square feet. The total permanent impact area would be 4,000 square feet and the temporary impact area would be approximately 800 square feet.

Alternative T01-1: This alternative would renovate the SERE logistics facility to provide 4,000 square feet of additional warehouse space. The existing 15,000 square feet of warehouse space would be optimized to maximize efficiency through the addition of features such as shelving, storage racks, and a freestanding second floor. Construction would occur in FY 2020 and would last a duration of 6 months. No upgrades or changes to utilities would be needed. All work would be done within the existing warehouse building. No ground disturbance or increase in impervious surface would occur. Therefore, this alternative would have no permanent or temporary impact area associated with ground disturbance.

No Action Alternative: Under the No Action Alternative, the Supply Warehouse would continue to be the sole storage location for SERE student training gear, as well as the processing area for gear issue/return for up to 92 students at a time (3+ times per week). This facility does not have adequate space to conduct maintenance, nor properly dry the items that come back from the field saturated for most of the year. Gear would continue to be dried on all available floor and workbench space, which would prevent daily warehouse operations for up to 20 hours per week and inhibit Friday gear return. Outside temporary storage facilities would also continue to be used.

Project T02: Water Training Survival Facility

The proposed action is to provide a dedicated water training survival facility to support SERE Water Survival Training courses at Fairchild AFB.

Selection Standard Applicability: The facility must be located within walking distance of the SERE campus, as students do not have vehicle access (Selection Standard 2). The facility must be sized to include a large pool capable of holding large life rafts similar to those carried on USAF aircraft (Selection Standard 1). The site for the facility must be free of environmental constraints such as wetlands (Selection Standard 3).

Alternatives Considered but Eliminated from Further Analysis*:* Location of the facility to the southeast of Building 1254 was eliminated because the space was selected as a location for a new dormitory instead (currently under construction). Use of the space to build a new dormitory better meets Selection Standard 2 for mission support and quality of life.

Alternatives Considered for this Project

Alternative T02 (Preferred Alternative): This alternative would construct a two tank Water Survival Training Facility located on the SERE training campus. Construction would occur in FY2021, and would last approximately 24 months. This alternative would entail construction of a 65,000-square-foot facility, as well as a new parking lot, road, and sidewalk totaling 30,000 square feet. New utilities would tie into existing utilities, likely at or near Building 1306. The total increase in impervious surface of would be approximately 95,000 square feet under this alternative. The total permanent impact area would be 95,000 square feet and the temporary impact area would be approximately 19,000 square feet.

Alternative T02-1: This alternative would construct a one-tank Water Survival Training Facility on the SERE training campus, in the same location as described for Alternative T02. This alternative would be similar to Alternative T02, except that the size of the facility would be smaller at approximately 42,250 square feet. The total increase in impervious surface would be approximately 42,250 square feet under this alternative. The total permanent impact area would be 42,250 square feet and the temporary impact area would be approximately 8,450 square feet.

No Action Alternative: Under the No Action Alternative, Water Survival Training would continue to be conducted in a shared MWR swimming pool, which is located 4.7 miles from the training campus. Busing of students from the SERE training campus requires 25 man-hours a week for transportation, the classes are condensed and hurried, and the pool is undersized for the required training. Therefore, this alternative does not meet Selection Standard 2 because of reduced capabilities to support mission needs, or Selection Standard 3 because of inefficiencies associated with transporting students. Additionally, use of the shared pool for training limits its availability for recreational and fitness use by the base populations, which does not meet Selection Standard 2 for quality of life.

2.3.4 Munitions Planning District

Project M01: Add/Alter Thorpe and Rambo Road Gate

The proposed action is to implement infrastructure improvements to relieve traffic congestion at the main gate and accommodate projected future traffic increases.

Project-Specific Selection Standards: The gate and roadway must meet new AT/FP requirements (Selection Standard 1). The roadway should be large enough to allow a serpentine path (Selection Standard 1). The guard building must include utilities and HVAC to enable continuous occupation (Selection Standard 2).

***Alternatives Considered but Eliminated from Further Analysis**:* Upgrade of the Graham Road Gate was eliminated from further analysis because traffic waiting at the gate would likely back up onto railroad tracks and Highway 2. Therefore, the alternative does not meet Selection Standard 1 for safety reasons. Expansion of the main gate was eliminated because it does not meet Selection Standard 1 because of space limitations. An alternative design of the expanded Thorpe-Rambo Gate with four traffic lanes was eliminated from further analysis because the fourth lane is not needed and the additional development would not meet Selection Standard 3.

Alternatives Considered for this Project

Alternative M01 (Preferred Alternative): This alternative would upgrade the existing Thorpe-Rambo Gate to become an alternate full-use gate that accommodates two-way traffic and has extended hours (6 a.m. to 6 p.m.). Construction would include replacement of the existing guard shack with a new 600-square-foot building, and construction of a 200-square-foot over-watch facility, with restroom, at the west end of the project site. A third traffic lane would be added to the existing road, and a grab net would be installed to the west of the guard shack. Construction would occur in FY 2021 and would last for approximately 8 months. Because there are no utilities on the site currently, the upgrade would require new utility lines (electrical, natural gas, water, and sewer). The total increase in impervious surface would be approximately 30,000 square feet. The total permanent impact area would be 30,000 square feet and the temporary impact area would be approximately 6,000 square feet. The proposed project is located in the AT/FP setback, but meets Selection Standard 1 because the overall footprint of the gate would not change. The additional traffic lane would use a system of barriers to control the flow of traffic in order to meet AT/FP requirements.

No Action Alternative: Under the No Action Alternative, the traffic congestion issues at the main gate would increase and become a significant safety hazard. Fairchild AFB personnel would potentially wait in traffic for long periods of time while waiting for entry onto the installation. Should temporary closure of the main gate be required, use of the Thorpe-Rambo Gate as an alternate main gate would pose a security risk to the installation, as the gate currently does not meet UFC 4-022-01 standards.

Project M02: Construct Entomology Facility

The proposed action is to provide a facility to house all pest management operations and storage of pesticides.

Selection Standard Applicability: The new facility must meet sizing requirements for personnel occupancy (Selection Standard 1). The facility should be located near the flightline, as the majority of the shop's work is done on the flightline (Selection Standard 2). The facility must have adequate space for the proper storage of hazardous materials such as pesticides (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Use of the Washington Air National Guard entomology facility as a shared facility was eliminated from further analysis because it does not have sufficient space and the Guard does not have plans to make the building a joint use facility. Modifying available space in the CES building was eliminated from further analysis because there is a lack of entomology-specific infrastructure in this building and it would not meet Selection Standard 1; and it is located far from the airfield and would not meet Selection Standard 3 because of reduced ability to meet mission needs. Additionally, modification of the building for a use that better meets selection standards is currently in the planning stages.

Alternatives Considered for this Project

Alternative M02 (Preferred Alternative): This alternative would construct a new 2,353-square-foot facility northeast of Building 1409. Construction would occur in FY2020, and would last for approximately 12 months. The new facility would consist of a reinforced concrete foundation and floor

slab, brick walls, metal roofing, utilities, and all necessary functions. A new parking lot and access road would also be constructed. The facility would provide safe storage of all pesticides, with closed sump systems to contain pesticide spills and prevent releases to the environment. The facility would be surrounded by a climb-resistant fence to prevent theft and vandalism, and would include AT/FP measures and meet DoD standards for minimum square footage (*Military Handbook Tech Guide #17* and the *Pest Management Design Guide*). The old entomology facility would likely be demolished under this alternative. There would be an increase in impervious surface of 6,353 square feet as a result of this alternative. The total permanent impact area would be 6,353 square feet and the temporary impact area would be approximately 1,300 square feet.

No Action Alternative: Under the No Action Alternative, the existing entomology facility would continue to be used for pest management operations and storage of pesticides. Pesticides would continue to be less than fully secured, and the undersized facility would continue to receive regular write-ups for improper storage and mixing of pesticides. Therefore, there would be a risk for adverse impacts to human health and natural resources. Its location 3 miles from the airfield, which is the primary work area, would continue to be a suboptimal location.

2.3.5 Multi-District

Project MD01: Demolish Underground Storage Tanks and Oil-Water Separators

The proposed action is to remove existing USTs and OWSs that are no longer needed.

Selection Standard Applicability: Tanks and OWSs must be removed to comply with environmental stewardship goals of the Air Force (Selection Standard 2). The demolition sites must be restored to natural state after work is completed (Selection Standard 3).

Alternatives Considered but Eliminated from Further Analysis*:* An alternative to make the tanks inert and abandon them in place was eliminated from further analysis because it does not meet Selection Standard 3 and the installation's unwritten environmental goal to be "tank free by 2033."

Alternatives Considered for this Project

Alternative MD01 (Preferred Alternative): This alternative would remove USTs and OWSs at various locations throughout the installation, as summarized in Table 2.3-1.

Table 2.3-1: Underground Storage Tanks and Oil-Water Separators Proposed for Removal

Building Number	Description
B1204	Airfield tower emergency generator support UST. 600-gallon fiberglass tank, empty (formerly held diesel).
B2319	Auto Hobby Center used oil UST. 1,000-gallon fiberglass tank, empty (formerly held diesel). Auto Hobby Center OWS. 1,000-gallon concrete, currently in use (maintenance bay sumps must be backfilled and the floor resurfaced as a condition of removing this oil-water separator).
B1258	Dining facility emergency generator support UST. 2,500-gallon fiberglass tank, empty (formerly held diesel).
B2071	Security Forces emergency generator UST. 1,000-gallon fiberglass tank, empty (formerly held diesel).
B1005	Airfield hangar waste oil UST associated with an OWS. 100-gallon fiberglass tank, empty (formerly held used oil).

Table 2.3-1: Underground Storage Tanks and Oil-Water Separators Proposed for Removal

Building Number	Description
B1012	Airfield hangar waste oil UST associated with an OWS. 100-gallon fiberglass tank, empty (formerly held used oil) Airfield hangar OWS. 800-gallon concrete, empty.
B1019	Airfield hangar waste oil UST associated with an OWS. 100-gallon fiberglass tank, empty (formerly held used oil).
B1039	Maintenance facility waste oil UST associated with an OWS. 100-gallon fiberglass tank, empty (formerly held used oil).
B1249	Vehicle maintenance and wash rack waste oil UST associated with an OWS. 100-gallon fiberglass tank, empty (formerly held used oil).
B2025	Vehicle storage yard and wash rack waste oil UST associated with an OWS. 100-gallon fiberglass tank, empty (formerly held used oil).
B2045	Heavy equipment wash rack waste oil UST associated with an OWS. 100-gallon fiberglass tank, empty (formerly held used oil).

Fairchild AFB would complete closure actions on all tanks to be removed. Demolition would occur in FY 2021, and would be intermittent, with an overall timeline of 6 months for removal of all tanks. Tanks would be removed via excavation, with all regulated tanks managed in accordance with Washington Department of Ecology requirements for tank closure. Soil samples would be taken as part of a Closure Report for each tank, and remediation would be conducted if samples are above Model Toxics Control Act (MTCA) thresholds. Following confirmation that removed tanks are empty, they would be destroyed and sent to a landfill for disposal. Areas disturbed during tank removal would be restored to match the adjacent paving or unpaved ground. No new impervious surface would be created under this alternative. The total temporary disturbance area would be approximately 2,000 square feet. If soil remediation is required at one or more locations, the temporary disturbance area would be larger.

No Action Alternative: Under the No Action Alternative, the USTs and OWSs listed in Table 2.3-1 would remain in place, with no actions to remove them or abandon them in place. These tanks would continue to degrade over time and could release oils into the soil and groundwater.

Project MD02: MSA and Pad 5 Drop Zone Electrical Underground

The proposed action is to move existing overhead lines to an underground location.

Project-Specific Selection Standards: The utility lines must be run underground to be consistent with the rest of the base (Selection Standard 2). Underground utility lines are required to increase resiliency of the power grind and ensure mission continuation in severe weather (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis*:* An alternative to move the power lines underground in the existing alignment was eliminated because it would result in unavoidable impacts to wetlands. Other route alignments that would result in unavoidable impacts to wetlands were also eliminated. A route option that would run along Pumphouse Road was eliminated because this alternative would necessitate digging up the road in order to avoid impacts to wetlands. A route option including two segments (one running from south of Building 1752 and connecting to the existing underground and one running north and east from Building 1481 to the sewage lift station) was eliminated because of potential impacts to mapped populations of rare plant species. An alternative to follow the existing alignment but bore underneath the wetlands was also eliminated because of potential risks to wetlands from drilling fluid.

Description of the Proposed Action and Alternatives

Alternatives Considered for this Project

Alternative MD02 (Preferred Alternative): One alternative was identified for moving overhead power lines located within the MSA fence to an underground location that would avoid wetlands, ERP sites, and areas with the highest potential for supporting sensitive plant species. Construction would occur in FY 2022, and would last approximately 8 months. Construction would entail removal of the existing overhead lines and poles, trenching, laying the underground line, and restoring the disturbed sites to match existing conditions. The route of the new underground line would include two segments. The first would start east of Building 1724 and run northwest, then east, then north to connect to the existing underground transmission line. The second segment would run from Building 1481 northwest and then north to Delaware Avenue, and then head east to the sewage lift station. No new impervious surface would be created as a result of this alternative. The existing overhead transmission lines would be demolished. Existing poles would be removed from the ground (unless located in a wetland that does not seasonally dry up), and the disturbed area restored to match the adjacent paved or unpaved area. The total temporary impact area associated with this project would be approximately 140,000 square feet. There would be no permanent impact area.

No Action Alternative: Under the No Action Alternative, the power lines would remain in their current overhead configurations and locations. The installation would be at risk for loss of power and associated maintenance needs during inclement weather.

3.0 AFFECTED ENVIRONMENT

The Region of Influence (ROI) for the Proposed Action is Fairchild AFB, unless otherwise specified for a particular resource area that would have a different ROI. For most resources included in this section, much of the information on the affected environment was obtained from a recent EA completed for the installation (Fairchild AFB 2018a) or the 2018 *Integrated Natural Resources Management Plan* (INRMP; Fairchild AFB 2018b), with pertinent updated information included as needed and available.

3.1 SCOPE OF THE ANALYSIS

This chapter describes the current conditions of the environmental resources, either human-made or natural, that would be affected by implementing the proposed actions or their alternatives, or the No Action Alternative. In compliance with NEPA, CEQ guidelines, and USAF guidance in 32 CFR Part 989, as amended, the description of the affected environment focuses on those resources and conditions potentially subject to impacts.

Based on the scope of the Proposed Action, issues with minimal or no impacts were identified through a preliminary screening process. The following resource area was not carried forward for a detailed analysis:

- *Airspace:* There would be no interactions between airspace and the proposed projects. None of the proposed projects involve changes to, or use of, airspace. Therefore, there would be no impacts to airspace, and this resource area is not carried forward for detailed analysis.

3.2 LAND USE

In most cases, the ROI for land use is Fairchild AFB. However, for proposed projects that occur near the installation boundary, the ROI would extend to adjacent properties.

3.2.1 Definition of the Resource

Land use generally refers to the management and use of land by people. The attributes of land use include general land use patterns, land ownership, land management plans, and special use areas. General land use patterns characterize the types of uses within a particular area. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. Management plans, policies, ordinances, and regulations determine the types of uses that protect specially designated or environmentally sensitive uses.

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. The USAF CPP also uses functional analysis, which determines the degree of connectivity among installation land uses and between on- and off-installation land uses, to determine future installation development and facilities planning.

In appropriate cases, the location and extent of a proposed action must be evaluated for its potential impacts on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its permanence.

3.2.2 Existing Conditions

Installation Land Use

The 2014 *Installation Development Plan* (IDP; Fairchild AFB 2014a) is the primary document on which future development and programming decisions are based. As such, it identifies existing land use (including incompatible land uses) and presents a Future Land Use Plan to provide a general direction for future development. The IDP details 11 land use categories and six planning districts. Table 3.2-1 lists the typical facility types found in each land use category.

Table 3.2-1: Land Use Categories and Typical Facilities and Features

Land Use Category	Typical Facilities/Features
Administrative	Headquarters, security operations, office
Airfield (or Airfield Pavements)	Aircraft operating areas: runways, taxiways, aprons
Aircraft Operations and Maintenance	Hangars, aircraft maintenance units, squadron operations, tower, fire station
Community Commercial	Commissary, base exchange, club, dining facility
Community Service	Gym/recreation center, theater
Housing - accompanied	Family housing (privatized)
Housing - unaccompanied	Airman housing, visitor housing – visitor quarters, temporary lodging facilities
Industrial	Base engineering, maintenance shops, warehousing
Medical/Dental	Hospital, clinic, pharmacy
Open Space	Conservation area, buffer space
Outdoor Recreation	Outdoor courts, athletic fields, golf course, ranges

Source: Fairchild AFB 2014a.

The six planning districts (i.e., administrative, community center, operations and maintenance, training, munitions, and residential) define the primary focus of planning for long-term future growth for each area's specific character. In general, military housing, administrative facilities, aircraft operations and maintenance facilities, commercial facilities, community services facilities, and outdoor recreation areas at Fairchild AFB are located north of the airfield, while the areas south of the airfield are primarily industrial and open space. Overall, Fairchild AFB does not have incompatible land uses, with the exception of the elementary school being located adjacent to fuel storage tanks (Fairchild AFB 2014a).

Under the Future Land Use Plan, there will be increases to the total acreage of land within each of the land use categories except open space, which will decrease by approximately 1,100 acres (Fairchild AFB 2014a). Table 3.2-2, Figure 3.2-1, and Figure 3.2-2 show where the proposed projects are located in terms of existing land use and planned future land use. The projects would fall primarily within the, airfield/industrial future land use categories, although some projects would also occur within areas mapped as community/commercial, outdoor recreation, and open space lands. Most of the proposed projects fall within the operations and maintenance planning district, with one or more projects located in the administrative, training, and munitions planning districts.

Affected Environment

The Fairchild AFB *Environmental Restoration Program Land Use Control Management Plan* (Fairchild AFB 2007a) documents the processes used to implement, monitor, maintain and enforce remedies that protect human health and the environment from ERP sites, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (see Section 3.7 for additional discussion of ERP sites). Fairchild AFB has established LUCs as part of its ERP, which prohibit or limit activities that may interfere with remedies for individual ERP sites. LUCs include any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property to prevent or reduce risks to human health, safety, and the environment from exposure to contaminated media. They include restrictions controlling access to the ERP sites, restrictions against on-installation use of contaminated groundwater, and implementation of a dig permit system to limit access and exposure to contaminated soils and groundwater (USAF 2007a). Specific LUCs that pertain to ERP sites that coincide with the proposed projects are listed in Table 3.7-1 in Section 3.7.2. The objective of LUCs is to ensure that future land use remains compatible with the land use that was the basis for the evaluation, selection, and implementation of the response action.

Table 3.2-2: Location of Proposed Projects in Planning Districts and Mapped Existing and Future Land Use Categories

Proposed Project	Existing Land Use Category	Planned Future Land Use Category	Planning District
A01—Upgrade Intelligence Facility	Administrative	Administrative	Administrative
OM01—Connect Rambo Gate Search Facility to Water Line Distribution Branch	Industrial, Administrative	Industrial, Administrative	Operations and Maintenance
OM02—Construct Potable Water Intertie to City of Spokane Water System	Industrial, Administrative, Open Space	Industrial, Administrative, Airfield/Industrial	Operations and Maintenance
OM03—Construct Covered Refueler Parking	Airfield/Industrial	Airfield/Industrial	Operations and Maintenance
OM04—Construct Pull-through Airfield Parking Spots	Airfield/Industrial, Open Space	Airfield/Industrial	Operations and Maintenance
OM05—Construct New Hydrant Refueling System	Airfield/Industrial	Airfield/Industrial	Operations and Maintenance
OM06—Demolish Building 1012	Airfield/Industrial	Airfield/Industrial	Operations and Maintenance
T01—Renovate Logistics Building	Industrial	Industrial	Training
T02—Construct Water Survival Training Facility	Open Space, Administrative	Community Commercial, Administrative	Training
M01—Add/Alter Thorpe and Rambo Road Gate	Administrative, Open Space	Administrative, Open space	Munitions
M02—Construct Entomology Facility	Open Space	Industrial	Munitions
MD01—Demolish USTs and OWSs	Community Commercial, Airfield/Industrial	Community Commercial, Airfield/Industrial	Multiple

Table 3.2-2: Location of Proposed Projects in Planning Districts and Mapped Existing and Future Land Use Categories

Proposed Project	Existing Land Use Category	Planned Future Land Use Category	Planning District
MD02—MSA and Pad 5 Drop Zone Electrical Underground	Open Space, Industrial, Administrative, Community Commercial, Outdoor Recreation	Industrial, Open Space, Administrative, Community Commercial, Outdoor Recreation, Airfield/Industrial	Training, Munitions

Source: Fairchild AFB geographic information system (GIS).

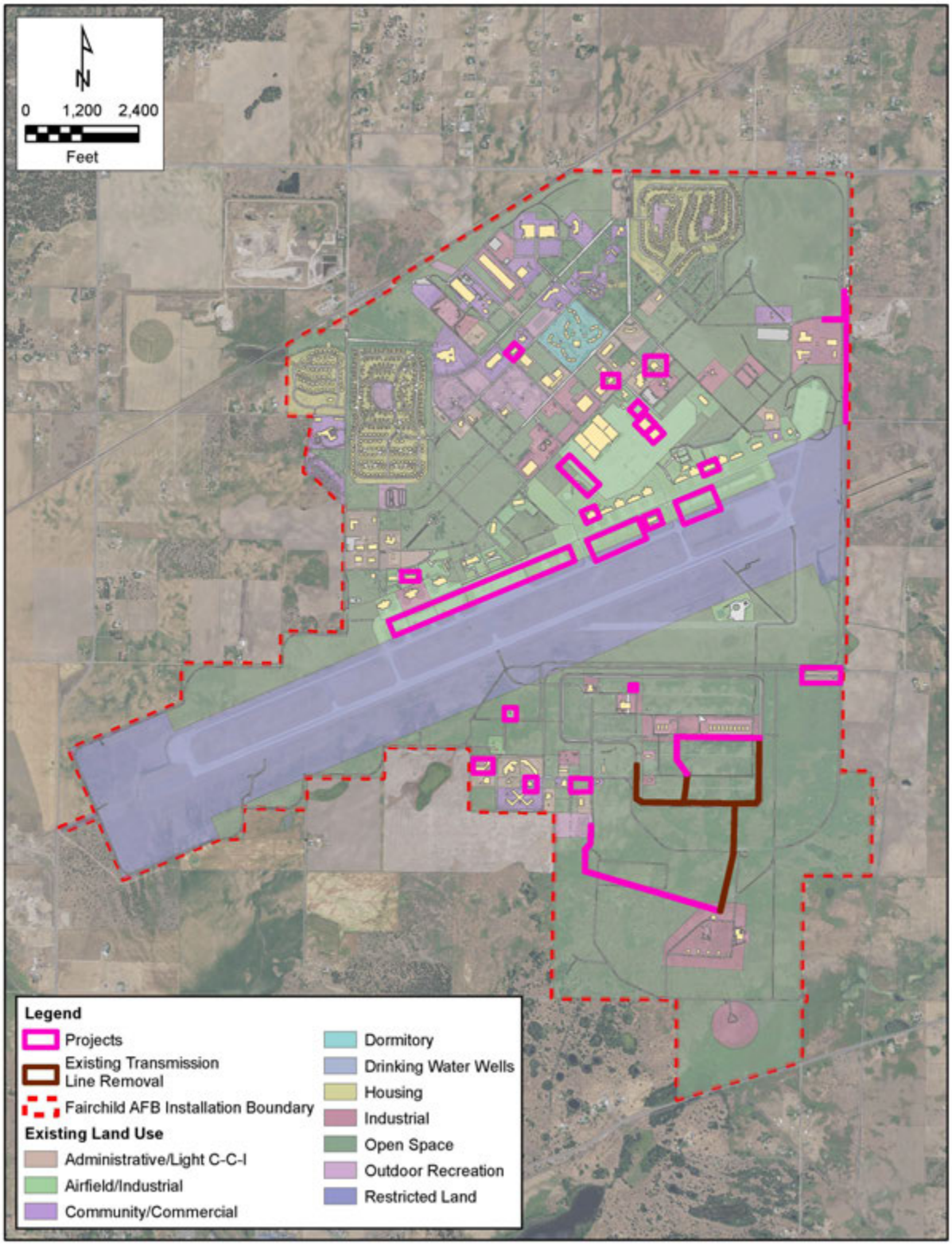

Figure 3.2-1: Existing Land Use Categories on Fairchild AFB

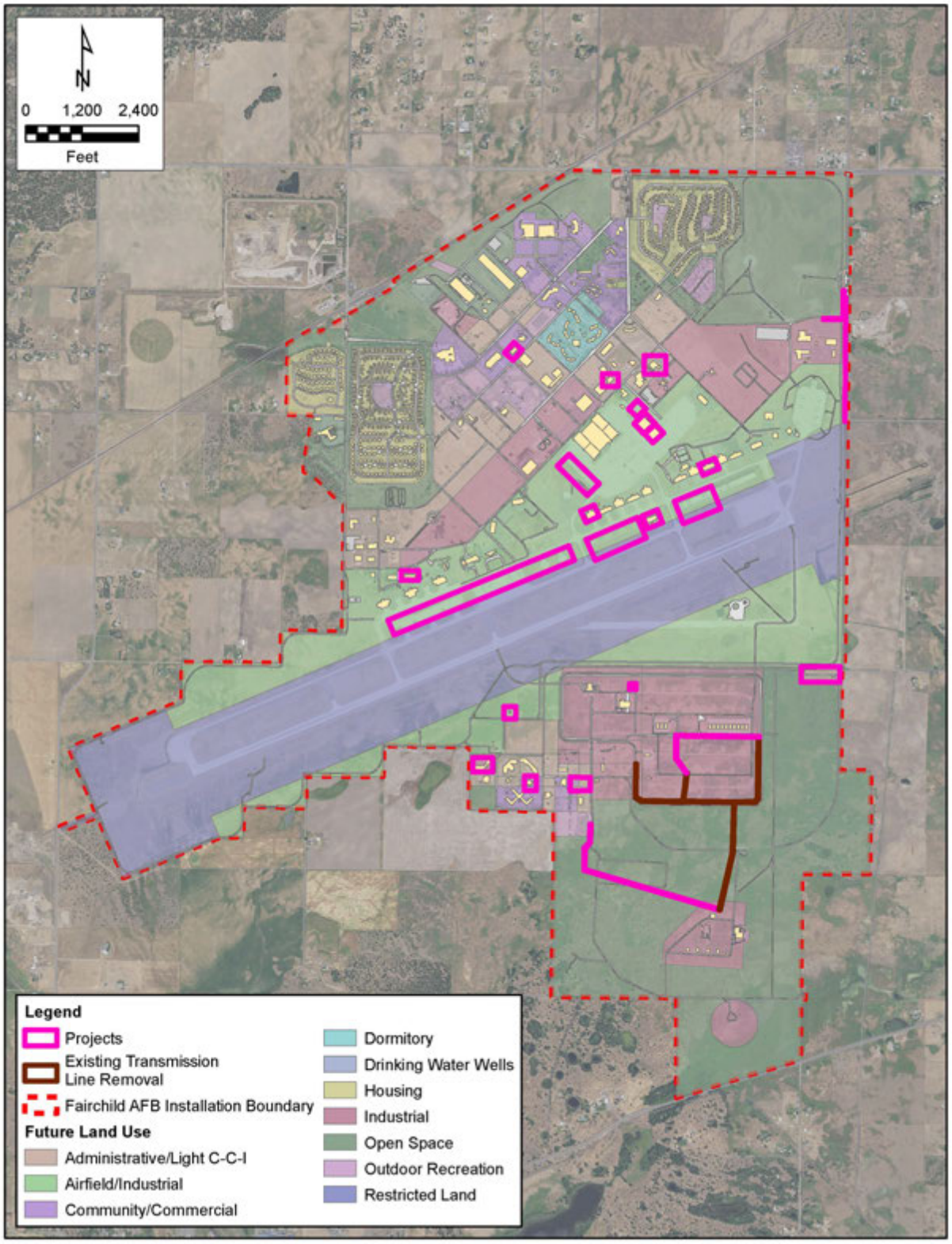

Figure 3.2-2: Planned Future Land Use Categories on Fairchild AFB

Surrounding Area Land Use

Fairchild AFB is located in Spokane County, Washington. The lands immediately surrounding the installation comprise the unincorporated (i.e., not self-governed) communities and lands of the West Plains. The West Plains are defined as the plateaued areas north of Medical Lake, west of Latah Creek and the Spokane River, south of Deep Creek ravine, and the eastern boundary of Fairchild AFB (City of Spokane 2014). Agriculture is the dominant land use within Spokane County's unincorporated areas and the West Plains area adjacent to Fairchild AFB, with vast areas west and southeast of the installation devoted to grain production or maintained as open rangeland. Land uses surrounding the installation are also primarily agricultural with a few commercial, industrial, and residential areas. Residential land uses adjacent to the installation consist of very low-density residential parcels that are 3 to 10 acres in size (Fairchild AFB 2014a).

Comprehensive land use planning for the West Plains is currently achieved via the Comprehensive Plans established for the cities of Spokane, Airway Heights, Medical Lake, and Cheney; the 2014 *West Plains Transportation Subarea Plan* (City of Spokane 2014); and the 2009 *Fairchild Joint Land Use Study* (JLUS) (Spokane County 2009). These plans were developed in part to identify compatible land uses and growth management guidelines near the installation (City of Spokane 2014). Spokane County, the City of Spokane, the City of Airway Heights, and the Spokane Tribe of Indians revised their land use ordinances and development code to implement JLUS recommendations (Fairchild AFB 2018a).

As discussed in the 2007 *Air Installation Compatible Use Zone (AICUZ) Study for Fairchild AFB* (Fairchild AFB 2007b), USAF provides recommendations and guidelines for compatible land uses to local jurisdictions through the AICUZ program. USAF has restrictive easements on privately and publicly owned land adjacent to Fairchild AFB within the installation's runway clear zones to protect against incompatible uses. Refer to Section 3.3.2 for more information on the existing noise environment of the area surrounding Fairchild AFB.

The Spokane County Zoning Code, Chapter 14.700*, Airport Overlay Zones* (AOZs), as amended in January 2008, implements development restrictions near airports through identification of AOZs. The AOZ Program is similar in design and intent to the AICUZ program. The Spokane County Zoning Code effectively implements Federal Aviation Administration-regulated accident potential zones to identify areas and restrict land uses within Spokane County communities immediately proximal to Fairchild AFB and other airports where the greatest potential for aircraft accidents exists (Spokane County 2009, Spokane County 2016).

3.3 NOISE

The ROI for noise includes Fairchild AFB and surrounding areas that could be affected by noise originating on Fairchild AFB and where noise-sensitive receptors may be located. Aircraft operations dominate the local soundscape during the time of operations.

3.3.1 Definition of the Resource

Noise is considered to be unwanted sound. That is, it interferes with normal activities or otherwise diminishes the quality of the environment. Noise is often generated by activities essential to a community's quality of life, such as aircraft operations, construction, or vehicular traffic. Responses to noise vary widely according to the characteristics of the sound source (intensity and frequency), the distance between the noise source and the receptor, the time of day, as well as the sensitivity and expectations of the receptor.

Affected Environment

Sound intensity, related to the pressure variations of the sound, varies widely (from a soft whisper to a jet engine). To accommodate this wide range in pressure fluctuations, sound is measured on a logarithmic scale and is called Sound Pressure Level or often just sound or noise level. Sound pressure level, designated by the units of decibels (dB), provides a quantification of the sound intensity.

The frequency (or pitch) of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the acoustic energy. Low-frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches. A healthy human ear can detect sounds that range in frequency from about 20 to 20,000 Hz. However, not all sounds in this range are heard equally well. Therefore, a scale to correct for this change in hearing perception by frequency is used, and the sound pressure levels in dB are termed "A-weighted" and designated by dB(A). For the purposes of this document, all sound pressure levels are dB(A). Examples of typical A-weighted sound levels are shown in Table 3.3-1.

Table 3.3-1: Typical A-Weighted Sound Levels

Outdoor	Sound Level (dB(A))	Indoor
Impact pile driver at 50 feet	100	Rock band
Gas lawnmower at 3 feet	90	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal
Heavy traffic at 150 feet	70	Vacuum cleaner at 10 feet
Normal conversation	60	Normal speech at 3 feet
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room

Source: California Department of Transportation (Caltrans) 2013.

During environmental noise analysis, many different types of noise metrics may be used depending on the purpose of use. These may include the following:

- **Maximum Sound Level (L_{Amax})** – The L_{Amax} is the A-weighted maximum sound level measured over a short duration. Sometimes shown as just L_{max}.
- **Equivalent Sound Level (L_{Aeq})** – L_{Aeq} is an energy averaged A-weighted sound level in dB(A) over a defined period of time such as 1 hour. Sometimes shown as just L_{eq}.
- **Day-Night Level (DNL)** – The DNL, often shown as L_{dn}, is similar to L_{Aeq} but is always over a 24-hour period. Additionally, a 10 dB(A) penalty is added to nighttime levels to emphasize the need for quiet during the period from 10 p.m. to 7 a.m. Thus, it is a composite metric that considers the maximum noise levels, the duration of the events, the number of events that occur, and the time of day during which they occur. While DNL provides a measure of the overall acoustical environment, it does not directly represent the sound level at any given time.

As previously stated, people respond differently to sources of noise. Annoyance is a subjective response that is often triggered by interference with activities by noise. Although the reaction of an individual to noise depends on a wide variety of factors, surveys have found a correlation between the time-averaged noise levels, such as those measured in DNL and the percentage of the affected population that is highly annoyed. It is widely accepted that 65 dB(A) DNL is the noise level at which a substantial percentage of the population can be expected to be annoyed by noise.

Federal Noise Regulations

The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Noise Control Act specifically exempts both aircraft operations and military training activities from state and local noise ordinances.

State Noise Regulations

Noise regulations for Washington State are provided in Title 173 of the Washington Administrative Code (WAC), Chapter 60: *Maximum Environmental Noise Levels*. This code includes limits for several types of environments. However, sound originating from temporary construction sites as a result of construction activity, sound created by blasting, sound created by the installation, and sound created by repair of essential utility services are all exempt between the hours of 7:00 a.m. and 10:00 p.m.

Local Noise Regulations

The Spokane County Code of Ordinances states that it is unlawful for any person to make a sound that creates a noise disturbance (Spokane County 2019a). However, per Section 612.20, *Exemptions*, sounds originating from temporary construction sites as a result of construction activity are exempt between the hours of 7:00 a.m. and 10:00 p.m. or when conducted more than 1,000 feet from any residence where humans reside.

3.3.2 Existing Conditions

Background Noise

Existing sources of noise on and adjacent to Fairchild AFB include military and civilian aircraft operations and overflights, road traffic, and noises such as lawn maintenance equipment, construction, and bird or animal vocalizations. For this general type of area, and considering that the area surrounding the installation is primarily rural, background noise levels for both L_{Aeq} and DNL, if aircraft operations are ignored, are generally low, as specified by the American National Standards Institute (ANSI) (2013). The estimated background noise levels using this reference, again without aircraft operations, are less than 40 dB(A) in the daytime and 34 dB(A) at night, with the 24-hour DNL being 42 dB(A) (ANSI 2013). Table 3.3-2 lists the estimated background noise levels for the land uses surrounding Fairchild AFB using the ANSI method. DNL is greater than the L_{Aeq} because of the noise penalty of 10 dB(A) applied for each hour between 10 p.m. and 7 a.m.

Table 3.3-2: Estimated Background Noise Levels Surrounding Fairchild AFB

Direction	General Land Use Characterization	L_{Aeq}: DB(A)		DNL: DB(A)
		Daytime	Nighttime	
South	Rural	40	34	42
North/East/West	Remote/Rural	38	32	40

Source: ANSI 2013

Aircraft Noise

The noise environment on Fairchild AFB is dominated by aircraft operations. The USAF has adopted the NOISEMAP computer program to estimate noise impacts from aircraft operations. NOISEMAP is a suite of computer programs and components developed by the USAF to predict noise exposure near an airfield. NOISEMAP accounts for all aircraft activities, including arrivals, departures, Sorties, maintenance activities, and engine run-up operations. NOISEMAP Version 7.3 was used to calculate the existing DNL

noise contours at Fairchild AFB. Figure 3.3-1 shows the existing DNL noise contours plotted in 5 dB increments, ranging from 65 to 80 dB(A) DNL (Fairchild AFB 2007b). The existing 65 dB(A) DNL noise contour extends approximately 0.5 mile from both ends of the installation's runway. While some residences are in the 65 dB(A) DNL contour on the approach and takeoff patterns, they are more than 1.5 miles from the proposed construction zones, and no nearby residences, schools, churches, hospitals, or noise-sensitive areas are within the existing 65 dB(A) DNL contour in the area that would be affected by noise from the proposed projects, based on aerial photography interpretation. Total sound level is the combination of background and the aircraft operations.

Affected Environment

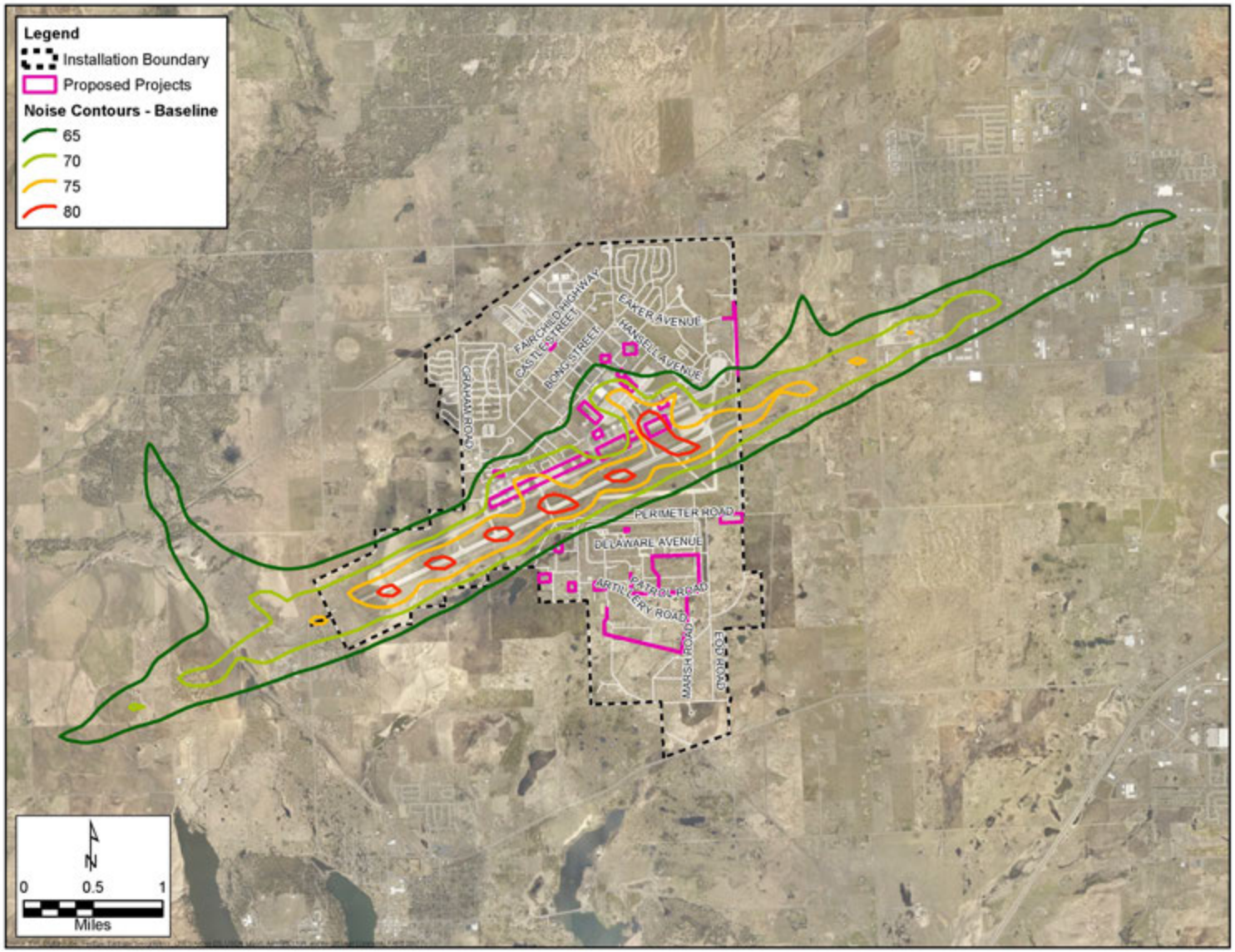

Figure 3.3-1: Existing Noise Contours and Proposed Project Locations for Fairchild AFB

3.4 AIR QUALITY

The ROI for air quality generally includes the entire air basin in which Fairchild AFB is located.

3.4.1 Definition of the Resource

The concentration of various pollutants in the local atmosphere determines the air quality at a given location. An increase in emissions may result in increases in local concentrations of pollutants. However, a region's air quality is influenced by many other factors, including the size and topography of the air basin and the prevailing meteorological conditions.

The U.S. Environmental Protection Agency (USEPA) Region 10 and Washington State Department of Ecology regulate air quality in the State of Washington. The Spokane Regional Clean Air Agency (SRCAA) regulates air quality in the greater Spokane region. Fairchild AFB is regulated by these agencies, as well as Air Force requirements. The Clean Air Act Amendments (42 USC Sections 7401–7671q) assign USEPA the responsibility to establish primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) that specify acceptable concentration levels of six criteria pollutants: particulate matter (measured as both particulate matter less than 10 microns in aerodynamic diameter [PM_{10}] and particulate matter less than 2.5 microns in aerodynamic diameter [$PM_{2.5}$]), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health effects, while long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health effects. While each state has the authority to adopt standards stricter than those established under the federal program, the State of Washington has accepted the federal standards which are shown in Table 3.4-1.

Federal regulations designate areas in violation of the NAAQS, which are labeled as nonattainment areas. Areas with levels below the NAAQS are said to be in attainment. Maintenance areas have previously been designated as nonattainment areas but have been redesignated to attainment for a probationary period through implementation of maintenance plans and showing compliance with the standards. The USEPA has designated all of Spokane County as attainment for all criteria pollutants, and parts of the county as maintenance areas for CO and PM_{10}. Fairchild AFB is not within these maintenance areas (USEPA 2019b, SRCAA 2015, SRCAA 2016). Because the proposed projects would occur within an area that is in full attainment for the NAAQS, general conformity rules do not apply to the Proposed Action.

Table 3.4-1: National Ambient Air Quality Standards

Pollutant	Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	Primary	8 hours	9 parts per million (ppm)	Not to be exceeded more than once per year
		1 hour	35 ppm	
Lead (Pb)	Primary and secondary	Rolling 3-month average	0.15 micrograms per cubic meter ($\mu g/m^3$)	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1 hour	100 parts per billion (ppb)	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and secondary	1 year	53 ppb	Annual mean

Table 3.4-1: National Ambient Air Quality Standards

Pollutant	Primary/Secondary		Averaging Time	Level	Form
Ozone (O_3)	Primary and secondary		8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	Primary	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
		Secondary	1 year	15.0 µg/m^3	Annual mean, averaged over 3 years
		Primary and Secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 year
	PM_{10}	Primary and Secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)	Primary		1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary		3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: USEPA 2019a.

3.4.2 Existing Conditions

Climate

Based on weather data for Airway Heights, the average high temperature is 83 degrees Fahrenheit (°F) with the hottest month being August. The coldest month is December, with an average low temperature of 22°F. Average annual precipitation is 16.7 inches per year. December is the wettest month, with an average rainfall of 2.3 inches (Idcide 2019).

Air Quality

The USEPA monitors levels of criteria pollutants at representative stations throughout the United States. Table 3.4-2 shows the highest reported concentrations by all monitoring stations located within Spokane County during 2017.

Table 3.4-2: Reported Criteria Pollutant Concentrations for Spokane County, Washington

Pollutant	Concentration
Carbon Monoxide	Not reported
Lead	Not reported
Nitrogen dioxide	Not reported
Ozone	0.068 ppm (4^{th} Max 8hr)[1]
$PM_{2.5}$	10.9 µg/m^3 (Annual Mean)[2]

Table 3.4-2: Reported Criteria Pollutant Concentrations for Spokane County, Washington

Pollutant	Concentration
PM_{10}	224 µg/m^3 (Second Max); 22 µg/m^3 (Annual Mean)[2]
Sulfur dioxide	Not reported

Source: USEPA 2018.
[1] Monitoring station = S 26010 Smith Road
[2] Monitoring station = 3104 E. Augusta Avenue
µg/m^3 = micrograms per cubic meter
hr = hours
ppm = parts per million

Fairchild AFB operates under a synthetic minor air-operating permit. Permit requirements include annual periodic inventory of all significant stationary sources of air emissions for each of the criteria pollutants of concern, monitoring, and recordkeeping requirements. On-base primary stationary sources of air emissions include paint booths, fuel storage areas, and stand-by diesel or natural gas generator sets (Fairchild AFB 2012a). Table 3.4-3 lists Fairchild AFB's installation-wide air emissions from all significant stationary sources in 2018. Washington does not require permitting of mobile source emissions (e.g., aircraft and vehicle operations).

Table 3.4-3: Emissions for Significant Stationary Sources at Fairchild AFB

Pollutant	Emissions (tpy)	Emissions Currently Permitted (tpy)
Carbon monoxide	1.7	100
Nitrogen oxides	6.0	90
Volatile organic compounds	5.9	100
$PM_{10}/PM_{2.5}$	0.5	100
Sulfur dioxide	0.1	100

Source: Fairchild AFB 2018c.
tpy = tons per year

Greenhouse Gases

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere; the accumulation of these gases in the atmosphere has been attributed to the regulation of the Earth's temperature. Human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history. Recent climate changes have had widespread impacts on human and natural systems (Intergovernmental Panel on Climate Change [IPCC] 2014).

The six primary GHGs, defined in Section 202(a) of the Clean Air Act and EO 13834, *Efficient Federal Operations*, are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The CEQ's *Federal Greenhouse Gas Reporting and Guidance* (CEQ 2016), also includes nitrogen trifluoride. Each GHG has an estimated global warming potential (GWP), which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface. The GWP allows GHGs to be compared with each other by converting the GHG quantity into the common unit "carbon dioxide equivalent."

Affected Environment

This EA considers both the potential effects of the proposed projects on climate change, as indicated by their estimated GHG emissions, and the implications of climate change for the environmental effects of the proposed projects.

3.5 WATER RESOURCES

For groundwater resources, the ROI includes Fairchild AFB as well as the geographic extent of regional aquifers to which surface water on Fairchild AFB contributes and from which the installation extracts potable water. For surface water resources, the ROI includes Fairchild AFB as well as the short distance beyond the installation boundary to which surface waters flow before infiltrating the ground. For wetlands, the ROI is Fairchild AFB.

3.5.1 Definition of the Resource

Water resources are natural and human-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to Fairchild AFB include groundwater, surface water, and wetlands. No floodplains occur on the installation. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater

Groundwater is water that collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks. A deposit of subsurface water that is large enough to tap via a well is referred to as an aquifer. Groundwater originates from precipitation, percolates through the ground surface, and is often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater can typically be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Groundwater quality and quantity are regulated under several different programs. The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act (SDWA), require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the SDWA, protect aquifers that are critical to water supply.

Surface Water

Surface water includes natural, modified, and constructed water confinement and conveyance features above groundwater that may or may not have a defined channel and discernable water flows. These features are generally classified as streams, springs, wetlands, natural and artificial impoundments (e.g., ponds and lakes), and constructed drainage canals and ditches.

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 lakes, rivers, and streams. Stormwater flows, which can be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to the management of surface water. Stormwater systems reduce sediments and other contaminants that would otherwise flow directly into surface waters.

The CWA (33 USC Section 1251 et seq., as amended) establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amounts of specific pollutants that are discharged to surface waters to restore and maintain the chemical, physical, and biological integrity of the water. As discussed in Section 3.12, a Construction General Stormwater Permit is required for construction sites where one or more acres would be disturbed. The permit mandates use of best management practices (BMPs) to ensure that soil disturbed during construction does not pollute nearby

water bodies. Construction or demolition that necessitates a permit requires preparation of a Notice of Intent to discharge stormwater and a Stormwater Pollution Prevention Plan (SWPPP) that is implemented during construction.

The issuance of stormwater NPDES permits is conducted by either a USEPA regional office or a state regulatory office, depending on which organization has primacy. In the State of Washington, USEPA has primacy over federal facilities. Section 438 of the Energy Independence and Security Act (EISA) (42 USC Section 17094) establishes stormwater design requirements for federal construction projects that disturb a footprint greater than 5,000 square feet. Additional guidance is provided in the *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the EISA* (USEPA 2009). UFC 3-210-10, *Low Impact Development*, also provides technical criteria, technical requirements, and references for the planning and design of applicable DoD projects to comply with stormwater requirements under EISA Section 438. Per these requirements, any increase in surface water runoff as a result of the proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. The integration of low impact development design concepts incorporates site design and stormwater management to maintain the site's predevelopment runoff rates and volumes to minimize further potential adverse impacts associated with increases in impervious surface area.

Water Quality Standards

Water quality standards are regulated by USEPA, under the SDWA (42 USC Sections 201, 300 et seq.) and the CWA. Section 303(d) of the CWA requires states to identify and develop a list of impaired water bodies where technology-based and other required controls have not provided attainment of water quality standards. Section 305(b) of the CWA requires states to assess and report the quality of their water bodies. Water quality standards for surface waters at Fairchild AFB are specified in Chapter 173-201A of the WAC. In addition, sediment management standards for the state are established in Chapter 173-204 of the WAC.

Wetlands

Wetlands are an important natural system and habitat because of the diverse biological and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat provision, and erosion protection. Upland buffers adjacent to wetlands also provide important functions by reducing impacts to wetlands from adjacent land uses through various physical, chemical, and biological processes (Washington State Department of Ecology 2014a).

CWA Sections 404 and 401 (through water quality certification) regulate the discharge of dredged or fill materials into the waters of the United States. The term "waters of the United States" has a broad meaning under the CWA, and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The U.S. Army Corps of Engineers defines wetlands as "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. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328.3(c)(4)).

EO 11990, *Protection of Wetlands* (24 May 1977), directs agencies to consider alternatives to avoid adverse impacts and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

Affected Environment

USAF policy is to avoid construction of new facilities within areas containing wetlands, where practicable. However, some projects might have minimal, direct impacts on wetland areas, and there is potential for indirect impacts from development and excavation in areas adjacent to these areas. A FONPA must be prepared and approved by the applicable USAF major command for all projects involving construction in a wetland.

3.5.2 Existing Conditions

Groundwater

Several regional aquifers supply water to the Fairchild AFB area, including the Spokane Valley-Rathdrum Prairie Aquifer, the Latah (Hangman) Creek Aquifer, and the West Plains aquifer. Perched groundwater can occur 5 to 20 feet below ground surface (bgs). Shallow aquifers below Fairchild AFB are correlated with bedrock fractures filled with gravel or deep deposits of stratified sands and gravels, whereas deeper confined aquifers are correlated with basalt layers with major aquifers at 100 to 200 feet and 400 feet bgs. Groundwater monitoring suggests that the overall trend for groundwater movement is easterly and northeasterly from the base. Wetlands on Fairchild AFB are an important source of recharge of shallow groundwater aquifers (Fairchild AFB 2018b).

Fairchild AFB obtains potable water from the Fort George Wright Annex groundwater well complex located off the installation. Potable water is drawn from the Spokane Valley-Rathdrum Prairie Aquifer and the Latah (Hangman) Creek Aquifer. Water System Annex Number 2 extracts water from the West Plains aquifer. Fairchild AFB operates a potable water storage and distribution system that provides water for various uses at all the facilities on the installation (see Section 3.12 for a discussion of water infrastructure).

Declines in water quantity in the West Plains aquifer system resulting from a depletion rate that surpasses the recharge rate has been identified as an issue of concern in the region (TetraTech et al. 2009).

Surface Water

Fairchild AFB lies within the Lower Spokane River watershed planning unit (Water Resource Inventory Area 54), on a nearly flat plain and subtle hydrologic divide (Fairchild AFB 2018b). It is predominantly located within the Deep Creek, Upper Hog Canyon Creek, and Headwaters Deep Creek hydrologic unit code 12 watersheds, with a very small portion of the installation along South Rambo Road within the Nine Mile Reservoir-Spokane River watershed (USEPA 2019c). Figure 3.5-1 shows the surface water features on the installation. There are no defined, natural stream courses on Fairchild AFB; however, there are wetlands with seasonal or persistent ponding and stormwater catchments or conveyances (Fairchild AFB 2012a). Surface hydrology on Fairchild AFB can generally be described as isolated from free-flowing surface waters within the watersheds; the nearest substantial water bodies to the installation are the Spokane River, approximately 13 miles to the east, and several lakes (Medical, West Medical, Silver, Clear, Otter, and Granite) immediately south of the installation (USAF 2014a). Stream channels originate several miles removed from the Fairchild AFB property boundary (Fairchild AFB 2018b). According to USEPA, surface water bodies listed as impaired under Section 303(d) of the CWA are found approximately 4 miles south of Fairchild AFB (USEPA 2019c).

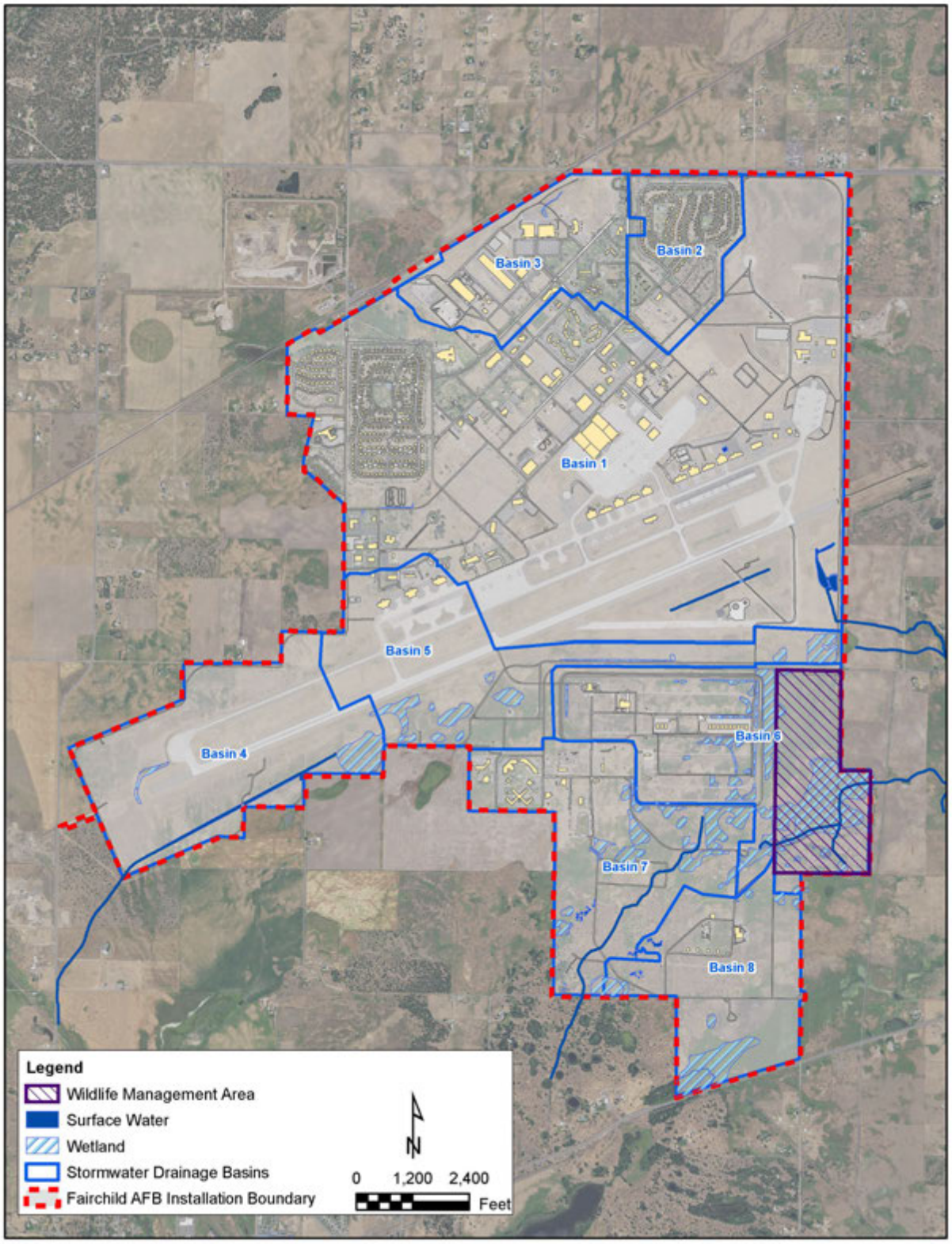

Figure 3.5-1: Water Resources on Fairchild AFB

Affected Environment

Stormwater runoff flows across the flat landscape and ponds in depressional areas before infiltrating, evaporating, or being collected in human-made drains in the developed areas of the installation. The stormwater system is divided into eight drainage basins correlating to the NPDES Storm Water Multi-Sector General Permit (No. WAR05F302) (Figure 3.5-1). Basin 1, the largest basin, drains approximately 40 percent of Fairchild AFB's land area and contains the most industrial activities. Basin 2 is for military housing and contains no industrial operations. Basin 3 contains Civil Engineering shops, petroleum, oil, and lubricants bulk storage, and miscellaneous light industrial operations. Basin 4 contains an inactive landfill and no industrial operations. Basin 5 contains portions of the main base and SERE facilities, which include aircraft maintenance, washing, and refueling facilities; vehicle maintenance and washing facilities; outdoor equipment storage; and bulk fuel storage. Basin 6 contains the ammunition storage facilities. Basins 7 and 8 contain other SERE facilities but no industrial activities (Fairchild AFB 2015a). The proposed projects analyzed in this EA occur in Basins 1, 5, 6, 7, and 8.

The storm drainage system is comprised of stormwater collection catch basins, drywells, collection piping, lagoons, ditches, and other above- and below-grade stormwater conveyances. The existing system effectively covers the central part of the installation and flightline areas, with the majority of precipitation infiltrating the ground or evaporating in localized topographic depressions and little stormwater runoff generated. The southern portion of the base has a stormwater conveyance system serving the SERE School campus. The remainder of the developed area allows sheet flow into open drainage ditches. In the spring, perched groundwater is present in many areas of the base, and localized flooding/ponding may occur, especially in the spring (Fairchild AFB 2014a).

Wetlands

A 2006 wetland inventory and functional value assessment provides the basis of most documented information about wetlands on Fairchild AFB. There are approximately 215 acres of mapped wetlands on the installation, most of which are disturbed or altered and occur almost exclusively in the southern portion of the installation as a result of the shallow, perched water table (see Figure 3.5-1). Some wetlands have resulted from stormwater runoff and impoundment by raised roads, while other wetlands are natural and in varying ecological conditions. The 2006 wetland inventory categorized wetlands on Fairchild AFB as depressional, constructed drainage ditches, or vernal pools, with the exception of a large wetland complex in the southwestern corner of the installation (Cascadia Technical Services 2006, Fairchild AFB 2018b). The wetlands support emergent and scrub-shrub vegetation, with reed canarygrass (*Phalaris arundinacea*) as the dominant species in most wetlands (Cascadia Technical Services 2006). Many wetlands have a component of non-native weed species, and some are completely dominated by non-native, highly competitive species.

Vernal pools are small, relatively shallow water areas that remain wet during the cool season but become completely dry during most of the warm season. Seasonal water accumulation is the result of a combination of climate, topography, substrate, and hydrology conditions of the area. Vernal pools on Fairchild AFB were initially mapped and described by the Washington Natural Heritage Program in 2003 and have been monitored periodically since then, most recently in 2017 (Fairchild AFB 2018b). Vernal pools on the installation provide potential habitat for 49 documented plant species, including rare plant species (see Section 3.8). Fifteen vernal pool areas have been identified and mapped in the southern part of the base (Fairchild AFB 2018b).

Most wetlands on Fairchild AFB were inventoried in 2006, and none have been rated using the most recent (2014) Washington Department of Ecology rating forms. Based on past wetland inventories, most wetlands are considered Category III or IV, with one Category II (Dw-17) and two Category I (Dw-18

and Dw-56) wetlands (Cascadia Technical Services 2006)[1]. Depressional wetlands on the installation range from poor to good condition, with those in good condition having local significance for groundwater regulation and wildlife habitat. The highest value wetlands on Fairchild AFB generally include the vernal pool and adjacent areas (west/southwest), the extreme southwestern corner (Dw-56 Complex), and the current wildlife viewing area wetlands/upland complex (Cascadia Technical Services 2006).

Wetlands occur in the vicinity of proposed projects in the southern half of the installation. Only proposed project MD02 is located in the vicinity of mapped vernal pools. The wetland delineation in the vicinity of MD02 will be confirmed prior to construction to ensure adequate buffers are maintained. See Section 4.5 for additional information.

3.6 SAFETY AND OCCUPATIONAL HEALTH

3.6.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for serious bodily injury or illness, death, or property damage. Safety addresses the well-being, safety, and health of members of the public, contractors, and USAF personnel during the demolition activities and facilities construction, and during subsequent operations of those facilities.

Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself, together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Hazardous activities can include construction, demolition, and many military activities. This EA addresses the safety implications from construction and other activities associated with the Proposed Action and alternatives.

Construction Safety

All contractors performing construction activities on USAF installations are responsible for following Air Force Occupational Safety and Health (AFOSH) standards identified within AFI 91-202 (USAF 2019) and Air Force Manual 91-203 (USAF 2018). AFOSH standards follow OSHA regulations and are required to conduct these activities in a manner that does not increase risk to workers or the public. OSHA regulations address the health and safety of people at work and cover potential exposure to a wide range of chemical, physical, and biological hazards, and ergonomic stressors. Examples of activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The regulations are designed to control these hazards by eliminating exposure to the hazards via administrative or engineering controls, substitution, use of personal protective equipment (PPE), and availability of Safety Data Sheets.

Occupational health and safety is the responsibility of each employer, as applicable. Employer responsibilities are to review potentially hazardous workplace conditions; monitor exposure to workplace

[1] The wetland rating system classifies wetlands into Categories I through IV. Category I wetlands provide the highest levels of functions and also include wetlands that are rare, sensitive to disturbance, or contain attributes that cannot be replaced. Category II wetlands provide high levels of some functions and are difficult but not impossible to replace. Category III wetlands provide moderate levels of functions, and can often be adequately replaced. Category IV wetlands provide the lowest levels of functions and are often heavily disturbed (Washington State Department of Ecology 2014b).

chemical (e.g., asbestos, lead, hazardous substances), physical (e.g., noise propagation, falls), and biological (e.g., infectious waste, wildlife, poisonous plants) agents, and ergonomic stressors; and recommend and evaluate controls (e.g., prevention, administrative, engineering, PPE) to ensure exposure to personnel is eliminated or adequately controlled.

Additionally, employers are responsible for ensuring a medical surveillance program is in place to perform occupational health physicals for those workers subject to the use of respiratory protection, or engaged in work that involves hazardous wastes, asbestos, or lead, or other work requiring medical monitoring.

Mission Safety

Mission safety on USAF installations is maintained through adherence to DoD and USAF safety policies and plans. The USAF safety program ensures the safety of personnel and the public on the installation by regulating mission activities. AFI 91-202, *The USAF Mishap Prevention Program*, implements Air Force Policy Directive 91-2, *Safety Programs*, and provides guidance for implementing the safety program for all activities that occur on USAF installations.

Fairchild AFB is a secure military installation with access limited to military personnel, civilian employees, military dependents, and approved visitors. Operations and maintenance activities conducted on the installation are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF occupational safety and health requirements. Adherence to industrial-type safety procedures and directives ensures safe working conditions.

Safety constraints such as explosive safety quantity-distance (ESQD) arcs and unexploded ordnance (UXO) probability areas (known munitions test/training areas) partially determine the suitability of areas for various land uses and, therefore, minimize safety hazards associated with mission activities. Although exposure of susceptible populations to safety hazards outside the safety constraints is unlikely, these constraints do not guarantee an absolute absence of risk. ESQD arcs are buffers around facilities that contain high-explosive munitions or flammable elements. The size and shape of an ESQD arc depends on the facility and the net explosive weight of the munitions being housed. Separations set by ESQD arcs establish the minimum distances necessary to prevent the exposure of USAF personnel and the public to potential safety hazards. The USAF protects personnel from the risks associated with UXO by controlling access to areas of concern; managing programs to remove UXO; and maintaining records of expenditures, range clearance operations, explosive ordnance disposal incidents, and areas of known or suspected UXO.

3.6.2 Existing Conditions

Construction Safety

Construction contractors at Fairchild AFB follow standard OSHA and AFOSH standards, as discussed in Section 3.6.1. For activities during which there is a potential for construction workers to encounter contamination from ERP sites, it is recommended that a health and safety plan be prepared in accordance with OSHA requirements prior to commencement of construction activities. Workers performing soil-removal activities within ERP sites are required to have OSHA 40-hour Hazardous Waste, Operations, and Emergency Response (HAZWOPER) training. In addition to this training, supervisors are required to have an OSHA Site Supervisor certification. Should contamination be encountered, the handling, storage, transportation, and disposal activities would be conducted in accordance with applicable federal, state, and local regulations; AFIs; and Fairchild AFB programs and procedures. HAZWOPER regulations that protect workers and the public at or near a hazardous waste cleanup site are discussed in 29 CFR 1910.120 and 29 CFR Part 1926.

Mission Safety

ESQD arcs cover a substantial portion of Fairchild AFB, primarily on land that is already undevelopable because of its location within primary airfield surfaces or clear zones (CZs). Areas constrained by ESQD arcs or CZs are associated with the Alert Area, Explosive Combat Aircraft parking, the MSA, and either end of the main runway. Fairchild AFB aggressively manages its development program to ensure that it meets explosive safety requirements (Fairchild AFB 2014a). There are no electromagnetic radiation safety zones, antenna look-angles, or security CZs that affect development on Fairchild AFB (Fairchild AFB 2012a).

Range sites on Fairchild AFB contain various munitions, UXO, and Chemical Agent Identification Sets (CAIS). Although most surface occurrences have been removed, munitions, UXO, and CAIS can still be found below the ground surface.

The 92d Civil Engineer Squadron Fire and Emergency Services Flight provides 24-hour crash, structural, and emergency medical first response; technical rescue; hazardous material and weapons-of-mass-destruction incident response; and fire prevention, safety, and training/education services to Fairchild AFB.

3.7 HAZARDOUS MATERIALS/WASTE

3.7.1 Definition of the Resource

Hazardous Materials, Hazardous Wastes, and Petroleum Products

Hazardous materials are defined by 49 CFR 171.8 as hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in 49 CFR Part 173. Hazardous waste is defined by the RCRA at 42 USC Section 6903(5), as amended by the Hazardous and Solid Waste Amendments, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

Petroleum products include crude oil or any derivative thereof, such as gasoline, diesel, or propane. They are considered hazardous materials because they present health hazards to users in the event of incidental releases or extended exposure to their vapors. Evaluation of hazardous materials and wastes focuses on the storage, transportation, handling, and use of hazardous materials, as well as the generation, storage, transportation, handling, and disposal of hazardous wastes. In addition to being a threat to humans, the improper release or storage of hazardous materials, hazardous wastes, and petroleum products can threaten the health and well-being of wildlife, habitats, soil systems, and water resources.

Special Hazards

Special hazards are substances that might pose a risk to human health. and they are addressed separately from hazardous materials and hazardous wastes. Special hazards include asbestos-containing materials (ACMs), lead-based paint (LBP), and polychlorinated biphenyls (PCBs), all of which are typically found in older buildings and utilities infrastructure.

Asbestos is regulated by USEPA under the Clean Air Act and Toxic Substances Control Act. USEPA has established that any material containing more than 1 percent asbestos by weight is considered an ACM. ACMs are generally found in building materials such as floor tiles, mastic, roofing materials, pipe wrap, and wall plaster. ACMs might be present in buildings and other structures on Fairchild AFB, and LBP is

found in many surface coatings on the installation. PCBs are human-made chemicals that persist in the environment and were widely used in building materials (e.g., caulk and joint compound) and electrical products prior to 1979. Structures constructed prior to 1979 potentially include PCB-containing building materials.

Environmental Contamination

CERCLA governs response or cleanup actions to address releases of hazardous substances, pollutants, and contaminants into the environment, including actions at federal facilities. Fairchild AFB is listed on the National Priorities List as a Superfund site, and cleanup actions throughout the installation are being performed under CERCLA. Section 120 of CERCLA pertains to cleanup actions at federal facilities. The 1990 Federal Facility Agreement (FFA) for Fairchild AFB is an agreement between the USEPA, USAF, and Washington State Department of Ecology that establishes the procedural framework and schedule for developing, implementing, and monitoring appropriate response actions at Fairchild AFB in accordance with CERCLA, the National Contingency Plan, Superfund guidance and policy, RCRA, and RCRA guidance and policy (USEPA et al. 1990).

The Defense Environmental Restoration Program was formally established (10 USC Sections 2700–2711) by Congress as part of the Superfund Amendments and Reauthorization Act of 1986 to provide for the cleanup of DoD property at active installations, Base Realignment and Closure installations, and formerly used defense sites throughout the United States and its territories. There are two restoration programs under the Defense Environmental Restoration Program: the ERP and the Military Munitions Response Program. The ERP addresses contaminated sites, while the Military Munitions Response Program addresses nonoperational military ranges and other sites suspected or known to contain UXO, discarded military munitions, or munitions constituents. Each site is investigated, and appropriate remedial actions are taken under the supervision of applicable federal and state regulatory programs. When no further remedial action is necessary for a given site, the site is closed and it no longer represents a threat to human health.

Description of ERP activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in identification of properties and their usefulness for given purposes (e.g., activities dependent on groundwater usage might be restricted until remediation of a groundwater contaminant plume has been completed).

For sites on Fairchild AFB that involve contamination by petroleum, oils, and lubricants, cleanup is conducted under the state Voluntary Cleanup Program (VCP), administered by the Washington State Department of Ecology, and in accordance with the MTCA.

Radon

Radon is a naturally occurring odorless and colorless radioactive gas found in soils and rocks that can lead to the development of lung cancer. Radon tends to accumulate in enclosed spaces, usually those that are below ground and poorly ventilated (e.g., basements). USEPA has established a guidance radon level of 4 picocuries per liter (pCi/L) in indoor air for residences; radon levels above this amount are considered a health risk to occupants.

3.7.2 Existing Conditions

Hazardous Materials, Petroleum Products, and Hazardous Wastes

Fairchild AFB uses hazardous materials and petroleum products such as liquid fuels, aircraft deicer, pesticides, and solvents for everyday operations. The use of these hazardous materials and petroleum products results in the generation and storage of hazardous wastes and used petroleum products on the installation. Fairchild AFB is a RCRA Large Quantity Generator with facility identification number

WA9571924647 (Fairchild AFB 2016a). RCRA Large Quantity Generators generate 1,000 kilograms per month or more of hazardous waste or more than 1 kilogram per month of acutely hazardous waste. Several facilities associated with the selected projects contain hazardous and petroleum wastes. Buildings 1005, 1012, 1019, 1039, 1204, 1249, 1258, 2025, 2045, 2071, and 2319 have out-of-use USTs that formerly contained diesel or used oil (and that would be removed under the Proposed Action). Buildings 1005, 1012, 1019, 1039, 1249, 2025, 2045, and 2319 have OWSs. Buildings 1037 and 1249 have hazardous waste accumulation area, and Buildings 2045 and 2071 contain battery accumulations points (Fairchild AFB 2012a, Fairchild AFB 2016a). Several new facilities associated with the selected projects would contain hazardous materials and petroleum wastes. Project OM05 would include a new jet fuel tank east of hangar 1029. Project M02 would include a new entomology facility northwest of Building 1409 that would store pesticides.

USAF installations manage hazardous materials through AFI 32-7086, *Hazardous Materials Management*, and hazardous wastes through AFI 32-7042, *Waste Management*. Fairchild AFB has implemented installation-specific hazardous materials and hazardous waste management plans. These plans define roles and responsibilities, address record keeping requirements, and provide spill contingency and response requirements (Fairchild AFB 2014b, Fairchild AFB 2016a).

Storage Tanks

AFI 32-7044, *Storage Tank Compliance*, implements AFPD 32-70 and identifies compliance requirements for USTs, aboveground storage tanks (ASTs), and piping associated with USTs and ASTs that store petroleum products and hazardous substances. USTs are subject to regulation under RCRA, 42 USC Section 6901, and 40 CFR 280.

There are 12 ASTs with capacities greater than 10,000 gallons at Fairchild AFB. The majority of these ASTs are located in the bulk fuel storage area between Vet Road and POL Road. The ASTs at the bulk fuel storage area primarily store jet propellant-8 (JP-8). The installation manages 23 regulated USTs and 32 unregulated ("exempt") USTs. The installation's regulated USTs store petroleum products (i.e., diesel, gasoline, and JP-8). The "exempt" storage tanks include heating oil storage tanks, emergency spill tanks, and OWS storage tanks. The design and construction of the regulated USTs meet federal code technical standards as per AFI 32-7044 by having secondary containment structures and appropriate leak detection systems. Buildings 1005, 1012, 1019, 1039, 1204, 1249, 1258, 2025, 2045, 2071 and 2319 contain empty USTs that formerly held diesel or used oil. These are associated with Project MD01. All of the storage tanks are in compliance with federal, state, and local standards (Fairchild AFB 2012a).

Special Hazards

Asbestos-Containing Material. ACMs on Fairchild AFB are managed in accordance with the installation's *Facility Asbestos Management Plan* (Fairchild AFB 2016b) and through a database that contains detailed and updated information on surveys and abatement actions. ACMs are generally maintained in place until the building is renovated or demolished. Buildings/structures must be checked for the presence of asbestos prior to demolition or renovation. Within the proposed project areas, previous surveys have identified ACMs in Buildings 1012, 2025, and 2045 (Fairchild AFB 2016c). Other buildings or structures associated with the proposed projects might also contain ACMs.

Lead-Based Paint. The installation's lead exposure and LBP management plan provides guidance on how to protect USAF personnel and the public from exposure to and management and disposal of LBP (Fairchild AFB 2016d). Fairchild AFB has conducted surveys for LBP in many buildings. Within the proposed project areas, surveys have identified LBP in Buildings 1012, 2025, and 2045 (Fairchild AFB 2016c). Other buildings or structures associated with proposed projects might also contain LBP.

Polychlorinated Biphenyls. Based on installation GIS data showing building construction dates, Buildings 1005, 1012, 1019, and 2025 were constructed prior to 1979, and therefore have the greatest potential to contain PCBs in building material. Older electrical infrastructure, such as light fixtures, surge protectors, and hydraulic equipment within these buildings might also contain PCBs.

Pesticides

Fairchild AFB maintains an *Integrated Pest Management Plan* (Fairchild AFB 2018d), as required by DoD Directive 4150.7. The plan describes the pest management practices at the installation, outlines the pest management efforts of the Pest Management Shop, and follows the recommended guidance of DoD Directive 4150.7. Chemical controls are a last resort method implemented at the installation only after all other procedures have failed. Fairchild AFB uses an integrated pest management approach to minimize the types and quantities of pesticides used at the installation while ensuring contamination of the environment and risks to human health are minimized. The installation's goal is to use 1,040 pounds of pesticides or less annually (Fairchild AFB 2018d).

The installation's Green Procurement Plan adds further incentive to minimize the use of chemical pesticides. Both chemical and non-chemical methods of weed pest control are used on the installation. Mechanical methods include mowing, weed eating, and hand-pulling. Temporary measures are usually chemical in nature. Currently, when weeds have been detected, a new spray unit will spray the area with herbicides. Herbicides approved for use on the installation are reviewed and updated as needed (Fairchild AFB 2018d). Under the Proposed Action, pesticides would be stored, mixed, and disposed of within the new entomology facility associated with Project M02.

Environmental Contamination

As of December 2015, there were 60 active ERP and three active Military Munitions Response Program sites on Fairchild AFB (Fairchild AFB 2015b), a portion of which occur in proximity to the proposed project locations (Figure 3.7-1 and Figure 3.7-2). Table 3.7-1 lists the ERP sites at the proposed project areas, along with their current status, and associated LUCs (see Section 3.2.2 for more information). Projects A01, OM03, OM04, OM05, OM06, T02, MO1, MD01, and MD02 are at least partially located within or near ERP site locations (Figure 3.7-1 and Figure 3.7-2).

Radon

The USEPA rates Spokane County, Washington, as radon Zone 1. Counties in Zone 1 have a predicted average indoor radon screening level greater than 4 pCi/L (USEPA 2019d). The installation has been determined to be a Medium-risk installation, based on the results of the USAF Radon Assessment and Mitigation Program of 1987.

AFI 48-148 specifies the following requirements for protection of USAF personnel and the public from avertable doses of radon exposure:

- Newly constructed facilities should not be tested for one year after completion of construction to allow for foundation settling.
- Monitoring should be performed using a long-term monitor deployed in the lowest occupied location of the facility.
- Structures that exceed 4 pCi/L should be mitigated by Civil Engineering to levels As Low as Reasonably Achievable.
- Remediated structures should be reassessed by the Installation Radiation Safety Officer for ambient radon concentrations no earlier than 2 weeks and no later than 6 months post remediation to validate the efficacy of the remedial action.

Affected Environment

- For new, permanent operating locations, a sampling of the facilities should be assessed for radon.
- Civil Engineering should design and construct new facilities on medium- and high-risk installations with radon-resistant features.

Affected Environment

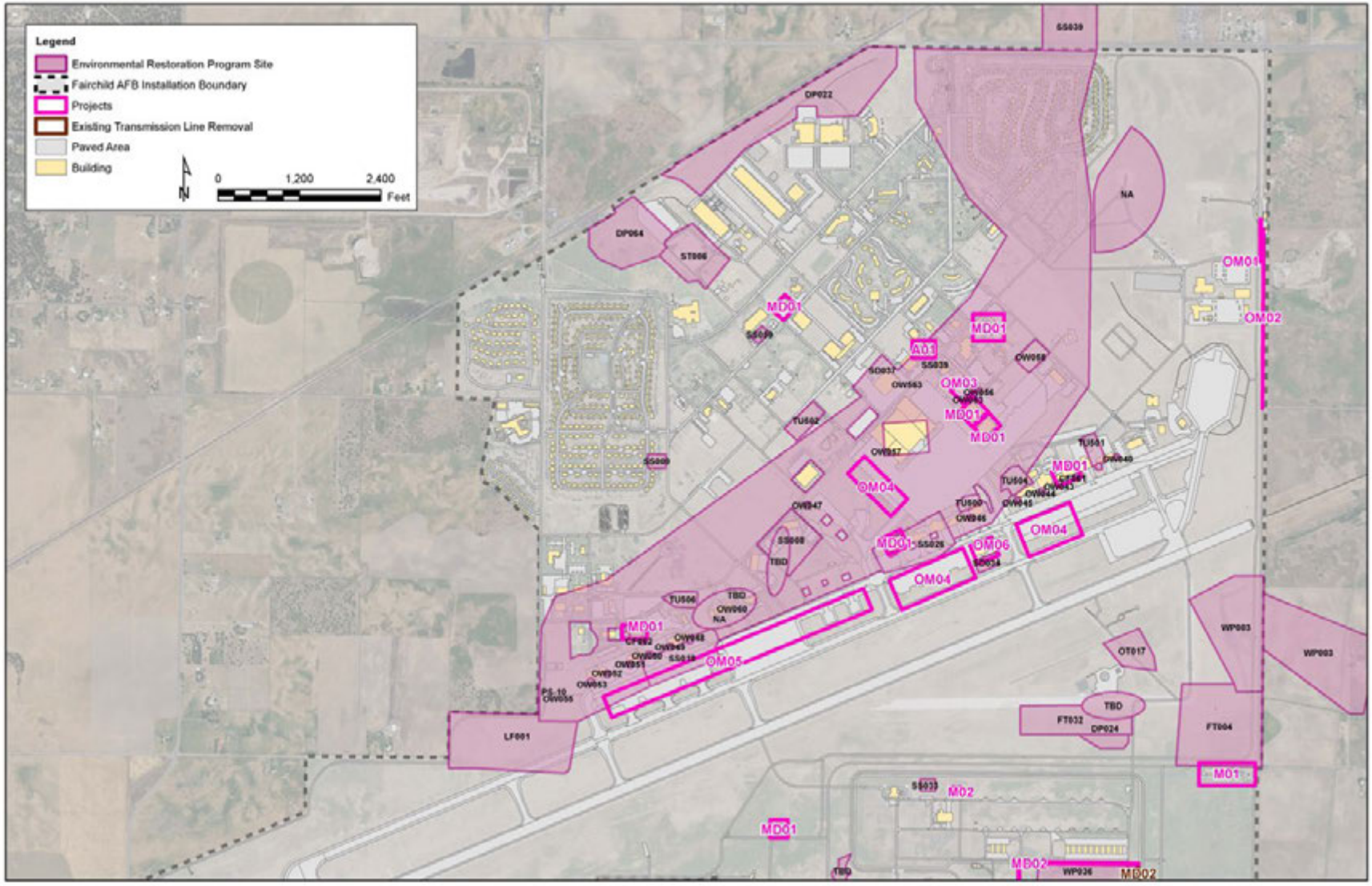

Figure 3.7-1: Environmental Restoration Program Sites on Fairchild AFB (North)

Affected Environment

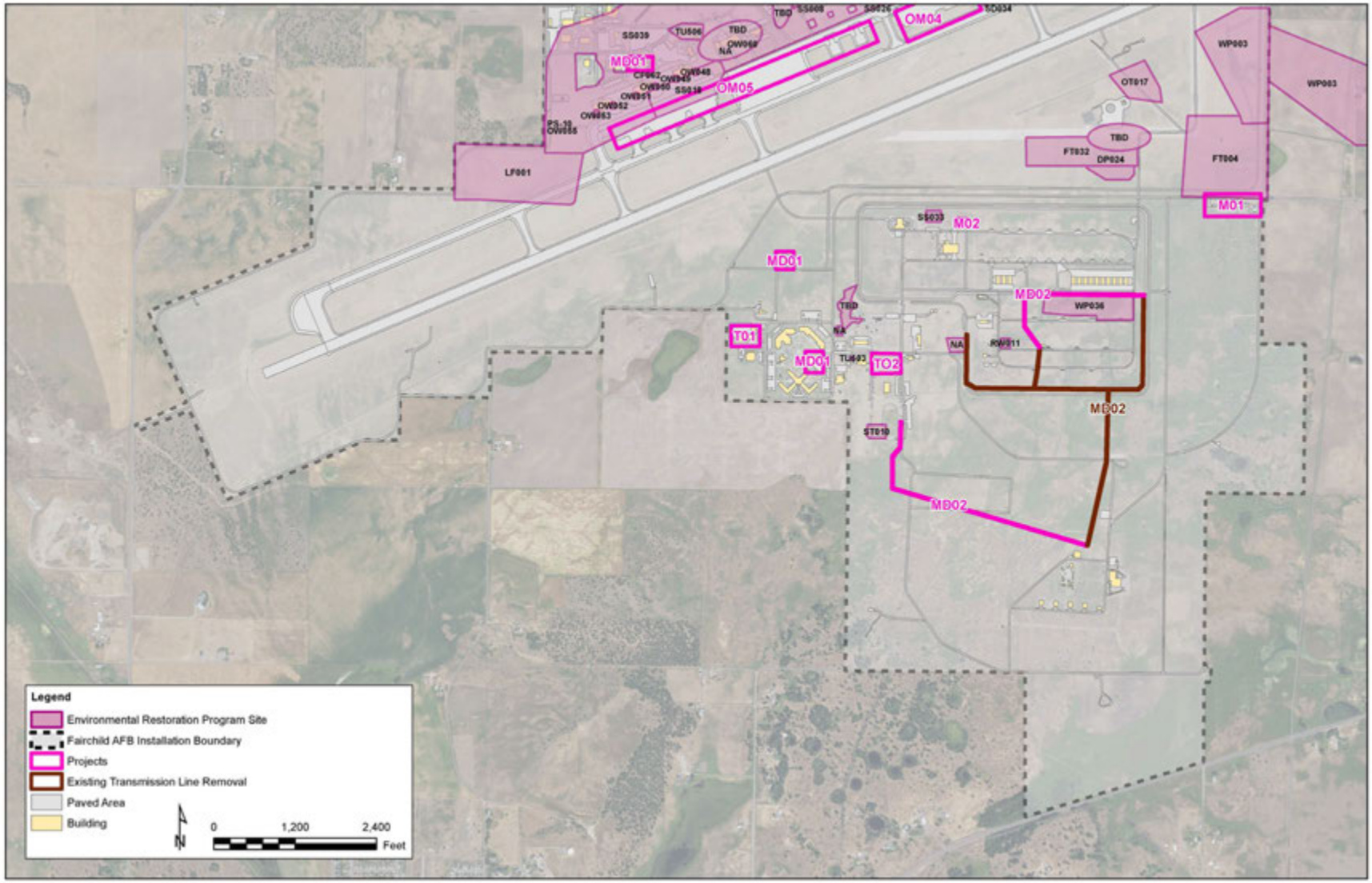

Figure 3.7-2: Environmental Restoration Program Sites on Fairchild AFB (South)

Affected Environment

Table 3.7-1: Summary of ERP Sites at the Project Areas Associated with the Proposed Action

Site	Site Name	Site Description	Status	Selected Projects	Date of Remedy in Place	Associated LUCs
CF-062 (TU506)	Contaminated Soil Building 1039 OWS (new)	Consolidated site TU506 incorporated former individual sites, including CF-062. CF062 specifically does not have exceedances of PALs in the soil but there is known to be petroleum-contaminated groundwater associated with consolidated site TU506.	TU506 requires additional groundwater monitoring and feasibility study.	MD01, OM05	FS: 5/2/2022, RIP: 3/9/2023	Soil control/water use
FT004	Fire Training Area	Site FT004 is the former fire training area located near the east end of the base, just south of the main runway. The site was used for fire training exercises from the early 1960s until 1991. Fire training exercises were conducted by igniting JP-4 jet fuel, waste oil, and solvents, which were then extinguished using aqueous, film-forming foam. After each exercise, the water, remaining fuel, and foam were drained into a nearby oil/water separator, which discharged into a field located east of the training site. These activities resulted in elevated concentrations of petroleum hydrocarbons in local soil and groundwater. A site remedial investigation was conducted in 1990. The primary contaminants of concern are BTEX in soil, and benzene and vinyl chloride in groundwater.	Remedial Action Required - Groundwater long-term monitoring and institutional controls	M01	RIP: 09/02/1997	Soil control/water use (bioventing lines present)
OW042 (TU500)	Building 1003 OWS	OW042 was the site of a 360-gallon oil-water separator removed in 1995. At the time of removal, the depth of excavation was 9 feet bgs and there was no groundwater encountered. Petroleum hydrocarbons were greater than PALs. This site was consolidated into site TU500 with other primarily former oil-water separator sites. TU500 RI sampling activities took place in 2015, 2016, and 2017, with a Final VCP Consolidated Site TU500 Remedial Investigation Report issued in August 2019. The RI report indicates that soil in the vicinity of OW042 still exceeds the PAL for TPH.	Additional remedial action proposed to address PAL exceedances including interim removal of soil with contamination above PAL	MD01	RIP/RC/SC: 05/04/2018	Soil control
OW043 (TU500)	Building 1005 OWS (old)	OW043 was the site of a 328-gallon OWS removed in 1995. At the time of removal, the depth of excavation was 10 feet below ground surface and groundwater was encountered with a sheen on the surface. Petroleum hydrocarbons were greater than PALs. This site was consolidated into site TU500 with other primarily former oil-water separator sites. TU500 RI sampling activities took place in 2015, 2016, and 2017, with a Final VCP Consolidated Site TU500 Remedial Investigation Report issued in August 2019. The RI report indicates that soil in the vicinity of OW043 exceeded PAL with a TPH-G Range of 140 mg/kg.	Additional remedial action proposed to address PAL exceedances including interim removal of soil with contamination above PAL.	MD01	RIP/RC/SC: 05/04/2018	Soil control
OW054	Building 1039 OWS (old)	This is the location of a former OWS. In July 1995, Fairchild AFB removed the on-site OWS, which received waste generated in the adjoining airplane hangar (Building 1039), and surrounding soil. Analytical results did not detect contaminates of concern above the respective MTCA Cleanup Levels or above the respective laboratory MDLs. Groundwater was reportedly not encountered in the OWS excavation. In November 2015, Fairchild AFB advanced five soil borings in the immediate vicinity of the former OWS to approximately 10 feet bgs. Performance soil samples indicated on-site soil is in compliance with MTCA Cleanup Standards. No groundwater was encountered during soil probe advancement. The site status was changed to No Further Action on January 9, 2019.	No Further Action	MD01	RIP/RC/SC: 09/17/2019	Soil control
OW056	Building 2035 OWS (old)	This site is the location of a former OWS at Building 2035, which received wastes from a trench drain in the wash rack. The OWS was removed on August 15, 1995. Petroleum contamination was detected in the excavation. A composite soil example was collected during excavation of the OWS, and contaminants of concern identified included gasoline, diesel, and HOs. Groundwater was not encountered in the excavation. An Initial Investigation/Site Hazard Assessment Approach was conducted in 2015. Several PAHs, TPH-D, TPH-O, total petroleum hydrocarbon-gasoline TPH-G, cadmium, chromium, lead, nickel, and zinc were detected in soil and groundwater samples, but all concentrations were below the MTCA Method A Cleanup Levels.	No Further Action	OM03	RIP/RC/SC: 03/28/2019	Soil control
OW061	Contaminated Soil Building 1005 OWS	OW061 (CF061) was a site identified during installation of a new OWS at building 1005. OW061/CF061 is included in consolidated site TU500, which is located primarily along the eastern end of the flightline. Consolidated TU500 RI report identifies limited soil contamination issues in the immediate vicinity and metals contamination in the groundwater.	Continued remedial action and completion of feasibility study required.	MD01	RIP/RC/SC: 05/04/2018	Soil control/ water use

Affected Environment

Table 3.7-1: Summary of ERP Sites at the Project Areas Associated with the Proposed Action

Site	Site Name	Site Description	Status	Selected Projects	Date of Remedy in Place	Associated LUCs
OW063	Building 2024 OWS	This site is the location of a former OWS at Building 2024 which was removed in 2012. At the time of removal, depth of excavation was 12 feet below ground surface. No groundwater was encountered, and soil sample results were all below PALs for VOCs, PAHs, RCRA metals, PCBs, GRO, DRO, and motor oils. An Initial Investigation/Site Hazard Assessment was conducted in 2015 and 2016 with soil and groundwater sampling and analysis performed. All compounds detected were below MTCA Method A CULs in soil and groundwater, and no further action with unlimited use/unrestricted exposure was recommended.	Cleanup Started	OM03	RIP/RC/SC: 09/24/2019	Soil control
SS018 (TU506)	Refueling Pit Area	SS018 (historically PS-2) was combined into TU506. In the mid-1980s a leaking tank and a large surface fuel spill contaminated groundwater with petroleum-based compounds. A remedial investigation and feasibility study were performed in 1993, with ongoing remedial actions since 1994 to perform groundwater monitoring and free-product recovery. Consolidated Site TU506 RI (May 2019) states petroleum and benzene contamination of soil and groundwater remain and a feasibility study and further remedial action is required.	Groundwater long-term monitoring, free-product monitoring and removal, institutional controls	OM05	RIP: 07/15/1993, RC/SC: 5/4/2018	Soil control/ water use/ contact
SS026/ TU500	Underground Fuel Line Area	Site SS026 was discovered in 1982 during construction work near Building 1019 when petroleum odors were detected and attributed to leaking underground jet fuel distribution lines near Taxiway No. 1. Additional investigation in the 1990s determined that soils were impacted with fuel constituents and the groundwater exceeded the MCLs for TPH constituents and benzene. Groundwater monitoring was last completed at the site in March 2012 to support the third 5-year review. Benzene was not detected in three site wells, and concentrations were 0.4 and 1.6 mg/L in two wells, indicating that the site has achieved the remedial action objectives of the ROD. However, due to concerns with residual TPH in the groundwater, while SS026 was planned for administrative closure under CERCLA, the existing petroleum contamination was transferred to consolidated site TU500 under which additional remedial actions and feasibility will be performed.	ROD Remedial Action Objectives for benzene in groundwater achieved. Further TPH remedial action and feasibility study required as part of consolidated site TU500.	MD01	7/14/1993 - SS026 ROD for Benzene in Groundwater, RC/SC: 5/4/2018	Soil control/ water use
SD034	Waste Fuel Operations Building 1012	Interim soil removal action completed 1998. TPH and PAH concentrations remained in soils following the interim action.	Institutional controls	OM06	ROD 9/10/2014; RIP 6/12/2006	Soil control/ water use
SS039	Trichloroethylene Orphan Plumes	The SS039 site was initially identified in 1985 as three separate sites (PS-10, IS-1, and PS-3). Field investigations and sampling were conducted at ERP sites PS-10, IS-1, and PS-3 beginning in 1991 and continuing through 1995, at which time “orphan” TCE plumes were consolidated for subsequent investigations into OU-5. SS039 is currently defined as a dissolved-phase contaminant plume. TCE and CTC occur at concentrations exceeding their respective PALs in saturated alluvium (silts, sands, and gravels) and in the uppermost weathered and fractured basalt. The plume originates near the western end of the base in the Site PS-10 vicinity (former Building 1060), continues northeasterly along the flightline, then northward toward the base boundary. The SS039 plume has been subdivided into three areas/portions: Proximal Plume: The most upgradient portion of SS039 and the location of the primary TCE source. Hot Spots #1 through #4 are located in the Proximal Plume. Central Plume: The central section of SS039 that includes flightline operations areas. Distal Plume: The downgradient portion of SS039 and the location of a TCE and CTC source. Hot Spot #5 is located in the Distal Plume. The length of the site SS039 contaminant plume extends approximately 2.5 miles from the upgradient Site PS-10 and phytostabilization demonstration area locations to the area near the northeast portion of the base. The width of the plume extends up to 1,800 feet at some locations, but is generally quite narrow, from 300 to 600 feet.	Remedial design	A01, OM03, OM04, MD01	12/10/2010 (ROD); RIP (estimated date): 9/20/2061	Soil control/ water use

Affected Environment

Table 3.7-1: Summary of ERP Sites at the Project Areas Associated with the Proposed Action

Site	Site Name	Site Description	Status	Selected Projects	Date of Remedy in Place	Associated LUCs
ST010	Fuel Oil Storage Tanks	Site ST010 (PS-07) formerly contained two 12,000-gallon USTs containing No. 6 oil, which fueled the Deep Creek Steam Plant and Building 1350 boilers, and one 500-gallon UST containing No. 2 fuel oil for preheating the boilers. In 1992, the three USTs and 400 cubic yards of petroleum-contaminated soil were removed. A groundwater release at the site was closed out in 1998. Additional soil was removed in 2013 when building 1350 was demolished. Data Gap Investigation in 2016 indicated limited remaining soil contamination. In 2019 a plan was submitted to excavate the remaining contaminated soil.	Further Action Required	MD02	RIP/RC: 2/7/1996	Soil control/ water use/ contact
TU503	Survival School Gas Station	In 1995, Fairchild AFB removed two 3,000-gallon gasoline USTs and replaced with one 4,000-gallon UST, which was removed in 2003. Available data indicated that petroleum-related contamination was likely present in soil and groundwater due to fuel releases from the USTs and associated piping. Subsequent periodic monitoring of the soil and groundwater have continued to detect TPH-D/HO, TPH-G, and benzene above the respective MTCA Method A CULs. Continued remedial action at this site is necessary.	Further Action Required	T02	RIP (estimated date): 6/14/2021	Soil control/ water use/ contact
WP036	Holding Lagoon and Imhoff Tank	The Site WP036 Lagoon was constructed in the late 1950s as a settling pond receiving sewage effluent. It included a primary settling tank, trickling filters, an Imhoff tank associated with former Building 1454, and SDBs. The Imhoff tank and SDBs are all that remain of the WWTP which became nonoperational in the early 1970s.The lagoon may have received some untreated wastewater when the former WWTP became overloaded, resulting in TPH-, PAH-, and mercury-contaminated lagoon sediments. Metals, (mercury, cadmium, silver, and zinc), DRO/MRO, and PAHs are likely present in lagoon sediment, soil, and surface water. Groundwater has not been impacted by these sources. A remedial investigation in 2019 recommended decommissioning or removing the remaining structures associated with the former WWTP and that remedial alternatives be evaluated to address potential risks to ecological receptors.	Further Action Required	MD02	RIP (estimated): 11/16/2023	Soil control/ water use

Sources: Bay West and URS 2015, 2016, 2017, 2018a-c, 2019a-d-; CH2MHILL 2010; Washington State Department of Ecology 2018, 2019a-f. Additional information is available to the public in the base Administrative Record maintained in accordance with CERCLA requirements.

BTEX = benzene, toluene, ethylbenzene and xylene
CTC = carbon tetrachloride
DRO = diesel range organic
FS = feasibility study
GRO = gasoline range organic
HO = heavy oil
MDL = method detection limit
MRO = mineral-oil range organic
MTCA = Model Toxics Control Act
PAH = polycyclic aromatic hydrocarbon
PAL = preventive action limit
PCS = petroleum-contaminated soil
RC = response complete
RI = remedial investigation
RIP = response in place
SC = site closed/closure
SDB = sludge drying bed
TCE = trichloroethane
TPH = total petroleum hydrocarbons
TPH-D = total petroleum hydrocarbons-diesel
TPH-G = total petroleum hydrocarbons- gasoline
TPH-O = total petroleum hydrocarbons-oil
WWTP = wastewater treatment plant

Affected Environment

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3.8 BIOLOGICAL RESOURCES

3.8.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Protected and sensitive biological resources include ESA-listed species (threatened or endangered) and those proposed for ESA listing as designated by the USFWS (terrestrial and freshwater organisms) and NMFS (marine organisms). Migratory birds are protected under the MBTA. Sensitive habitats include designated critical habitat protected by the ESA and sensitive ecological areas designated by state or other federal rulings. Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA). Sensitive habitats also include wetlands, plant communities that are unusual or limited in distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

The ESA (16 USC Section 1531 et seq.) establishes a federal program to protect and recover imperiled species and the ecosystems upon which they depend. The ESA requires federal agencies, in consultation with the USFWS and NMFS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Jeopardy occurs when an action is reasonably expected, directly or indirectly, to diminish numbers, reproduction, or destruction of a species so that the likelihood of survival and recovery in the wild is appreciably reduced. An endangered species is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is any species likely to become an endangered species in the foreseeable future. The ESA also prohibits any action that causes a "take" of any listed animal. To take means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land.

Critical habitat is habitat that is essential to the conservation of a threatened or endangered species. Federal agencies must ensure that their activities do not adversely modify designated critical habitat to the point that it will no longer aid in the species' recovery.

In Washington State, the Washington Department of Fish and Wildlife oversees the listing and recovery of special status fish and wildlife species, under the provisions of WAC Rule 220-610-110 (*Endangered, Threatened, and Sensitive Wildlife Species Classification*). The Washington Natural Heritage Program tracks rare plant species in the state.

The MBTA of 1918 (16 USC Sections 703–712), as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require federal agencies to conserve migratory bird populations. Unless otherwise permitted by regulations, the MBTA makes it unlawful to (or attempt to) pursue, hunt, take, capture, or kill any migratory bird, nest, or egg. Each federal agency that takes actions that could have measurable negative impacts on migratory birds is directed by EO 13186 to develop and implement a Memorandum of Understanding with USFWS to promote the conservation of migratory bird populations.

Bald and golden eagles are protected under the BGEPA, which prohibits the "take" of bald or golden eagles in the United States without a 50 CFR 22.26 permit. BGEPA defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." To "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause: (1) injury to an eagle; (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from

human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

3.8.2 Existing Conditions

Fairchild AFB is divided into five natural resource management areas, based on habitat conditions, as described in the INRMP (Fairchild AFB 2018b). The south base area contains the most valuable wildlife habitat in terms of area available (least amount of development), diversity of species present, and management potential. On-base privatized housing areas in the northern portion of the base are typical of urban residential areas, with landscaped trees and vegetation. The commercial/administrative/community area contains similar landscaped features. The airfield/industrial area is predominantly paved, with low vegetation that has been managed to minimize avian use. For the most part, this area is of low value to wildlife and wildlife use is not encouraged. The open space area in the northeast corner of the installation supports mixed native and non-native grasses and other weedy herbaceous vegetation and is likely used by some wildlife associated with pastures and other open agricultural uses (Fairchild AFB 2018b).

Vegetation

Fairchild AFB is within the Walla Walla Plateau Section of the Columbia Plateau Physiographic Province where grassland or shrub-steppe vegetation grades into ponderosa pine (*Pinus ponderosa*) forest (Franklin and Dyrness 1973). Perennial grassland community associations dominated by Idaho fescue (*Festuca idahoensis*) or bluebunch wheatgrass (*Pseudoroegneria spicata*) are found in drier sites, while ponderosa pine, quaking aspen (*Populus tremuloides*), and wetland associations exist in moist sites (Fairchild AFB 2018a).

Vegetation on Fairchild AFB was surveyed and mapped by the Washington Natural Heritage Program in 2010 (Crawford 2010). Most vegetation communities on Fairchild AFB have been altered by past land uses, including agriculture, livestock grazing, and military development and training. Current vegetation on the installation is a mix of non-native landscaping, disturbed/altered vegetation communities, and native vegetation communities. The developed areas of the base are categorized for land planning purposes as improved or semi-improved, with natural areas falling into the unimproved category. Improved and semi-improved areas make up approximately 2,800 acres and are mostly found in the northern portion of the base. Approximately 1,200 acres in the southern portion of the base are primarily unimproved and covered with open non-native grass fields, wetlands, Russian olive (*Elaeagnus angustifolia*) thickets, scattered ponderosa pine stands, native grassland with some invasive plants, and shrub fields. Additionally, approximately 200 acres in the northeast corner of the base are unimproved but support predominantly non-native grasses. Non-native invasive plants and noxious weeds are present throughout the base (Fairchild AFB 2018a).

Scattered portions of the installation support altered remnants of natural vegetation. Native bunchgrass communities appear in mowed and unmowed condition. The mowed sites are dominated by native species tolerant to clipping. Unmowed sites vary by past and present land use, generally resembling potential bunchgrass communities (Fairchild AFB 2018b).

Wetland vegetation occurs around potholes and vernal pools in the southern portion of the base (see Section 3.5.2). Cattail and rushes grow on sites with more permanent water, and quaking aspen rings these ponds, often accompanied by ponderosa pine. Vernal pools support spikerush (*Eleocharis* sp.) and many native and non-native plant species. The southeast edge of the installation supports a large wetland vegetation community of Russian olive shrubs and a mosaic of grasses and grass-like plants that varies in pattern according to water availability (Fairchild AFB 2018b).

Affected Environment

Noxious Weeds

Noxious weeds occurring on Fairchild AFB include common bugloss (*Anchusa officinalis*), kochia (*Bassia scoparia*), sulphur cinquefoil (*Potentilla recta*), Russian thistle (*Salsola tragus*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), bull thistle (*Cirsium vulgare*), wavyleaf thistle (*Cirsium undulatum*), sow thistle (*Sonchus arvensis*), Dalmatian toadflax (*Linaria dalmatica*), rush skeletonweed (*Chondrilla juncea*), diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea stoebe*), meadow knapweed (*Centaurea* x *gerstlaueri*), and common St. John's wort (*Hypericum perforatum*) (Fairchild AFB 2012).

The south base area is most at risk from noxious weed infestations, as there are limitations to the type and timing of weed control due to wetlands, shallow water tables, and habitat for Spalding's catchfly (*Silene spaldingii*). Throughout the installation, invasive plants are managed using a combination of mowing, spraying, and mechanical removal. Biological control has been used on knapweed and Canada thistle (Fairchild AFB 2018b).

Wildlife

In general, most undeveloped wildlife habitat occurs in the southern half of Fairchild AFB. This area contains a mixture of disturbed and semi-native wetlands, open grass/shrubland, and two small patches of ponderosa pine. This area provides habitat suitable for a variety of bird and mammal species. The northern portion of the installation is mostly developed and contains habitats and species typical of urban areas (Fairchild AFB 2018a). Because of the low water levels within wetlands, drainage channels, and stormwater detention areas, Fairchild AFB contains no fish habitat or perennial water connection to fish-bearing waters (Fairchild AFB 2018b).

Bird species present at Fairchild AFB include year-long residents, neotropical migrants, occasional winter residents, and migrants that stop over in the spring and fall. During the most recent (2005) bird survey of the southeastern portion of the installation, 65 bird species were recorded (Eastern Washington University 2005 in Fairchild AFB 2018b). Birds found within the commercial/administrative/community areas are predominantly fruit-eating or omnivorous species, such as American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), cedar waxwing (*Bombycilla cedrorum*), and purple finch (*Carpodacus purpureus*) (Fairchild AFB 2012a). While bird use of airfield areas is discouraged, the mowed grassland habitats can potentially provide suitable habitat for birds such as the grasshopper sparrow (*Ammodramus savannarum*) and savannah sparrow (*Passerculus sandwhichensis*) (Fairchild AFB 2009a).

Mammals that use habitats at Fairchild AFB include coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), and white-tailed deer (*Odocoileus virginianus*), as well as numerous species of small mammals, as documented in a 2005 survey (Eastern Washington University 2005 in Fairchild AFB 2018b). Amphibian and reptile species that have been documented on Fairchild AFB include Pacific treefrog (*Pseudacris regilla*), Columbia spotted frog (*Rana luteiventris*), western terrestrial garter snake (*Thamnophis elegans*), valley (common) garter snake (*Thamnophis sirtalis fitchi*), western yellow-bellied racer (*Coluber constrictor mormon*), long-toed salamander (*Ambystoma macrodactylum*), western painted turtle (*Chrysemys picta bellii*), western rattlesnake (*Crotalus viridis*), and northern rubber boa (*Charina bottae*). Amphibians and reptiles have been documented across the majority of the southern portion of the base, with abundances of several species, including the Washington State candidate species Columbia spotted frog, very high in certain areas. No individual reptiles or amphibians have been detected at the northern (more developed) sections of the installation, likely due to lack of suitable habitat (Fairchild AFB 2018b).

Affected Environment

Fairchild AFB maintains an installation-wide Pest Management Plan to monitor and control wildlife pests on the installation such as flies, fleas, ticks, termites, carpenter bees, ants, spiders, bees, wasps, mice, ground squirrels, moles, and voles (Fairchild AFB 2018d).

Protected and Sensitive Species

Developed portions of the installation are not expected to provide suitable habitat for federally or state-listed threatened or endangered species. Table 3.8-1 summarizes listed and rare species identified as occurring or potentially occurring on Fairchild AFB as presented in the INRMP.

Table 3.8-1: Federally and State-Listed Threatened, Endangered, and Rare Species Occurring on or Near Fairchild AFB

Common Name	Scientific Name	Observed on Main Base	Federal Status[1]	State Status
Birds				
Bald eagle	*Haliaeetus leucocephalus*	--	Delisted, SOC, M	--
Golden eagle	*Aquila chrysaetos*	Y	--	C
Ferruginous hawk	*Buteo regalis*	--	SOC	T
Northern goshawk	*Accipiter gentilis*	--	SOC	C
Peregrine falcon	*Falco peregrinus*	--	SOC	--
Burrowing owl	*Athene cunicularia*	Y	SOC	C
Flammulated owl	*Otus flammeolus*	--	--	C
Common loon	*Gavia immer*	--	--	S
American white pelican	*Pelecanus erythrorhynchos*	--	--	T
Sharp-tailed grouse	*Tympanuchus phasianellus*	--	SOC	E
Pileated woodpecker	*Dryocopus pileatus*	--	--	C
Black-backed woodpecker	*Picoides arcticus*	--	--	C
Black tern	*Chlidonias niger*	--	SOC	--
Lewis' woodpecker	*Melanerpes lewis*	--	--	--
Loggerhead shrike	*Lanius ludovicianus*	--	SOC	C
Upland sandpiper	*Bartramia longicauda*	--	--	E
Sagebrush sparrow	*Artemisiospiza nevadensis*	--	--	C
Sage thrasher	*Oreoscoptes montanus*	--	--	C
Vaux's swift	*Chaetura vauxi*	--	--	C
Western grebe	*Aechmophorus occidentalis*	--	--	C
Willow flycatcher	*Empidonax traillii*	--	SOC	--

Table 3.8-1: Federally and State-Listed Threatened, Endangered, and Rare Species Occurring on or Near Fairchild AFB

Common Name	Scientific Name	Observed on Main Base	Federal Status[1]	State Status
Mammals				
Townsend's big-eared bat	*Corynorhinus townsendii*	--	SOC	C
Black-tailed jackrabbit	*Lepus californicus*	--	--	C
White-tailed jackrabbit	*Lepus townsendii*	Y	--	C
Washington ground squirrel	*Spermophilus washingtoni*	--	C	C
Reptiles/Amphibians				
Northern leopard frog	*Rana pipiens*	--	SOC	E
Columbia spotted frog	*Rana luteiventris*	Y	--	C
Western toad	*Bufo boreas*	--	SOC	C
Invertebrates				
California floater	*Anodonta californiensis*		SOC	C
Mann's mollusk-eating ground beetle	*Scaphinotus mannii*	--	--	C
Juniper hairstreak	*Mitoura grynea barryi*	--	--	C
Shepherd's parnassian	*Parnassius clodius shepherdi*	--	--	C
Silver-bordered fritillary	*Boloria selene atrocostalis*	--	--	C
Vascular Plants				
Grand redstem	*Ammannia robusta*	--	--	T
Nuttall's pussy-toes	*Antennaria parvifolia*	--	--	S
Bristly sedge	*Carex comosa*	--	--	S
Yellow lady's-slipper	*Cypripedium parviflorum*	--	--	T
Green keeled cotton-grass	*Eriophorum viridicarinatum*	--	--	S
Gray stickseed	*Hackelia cinerea*	--	--	S
Palouse goldenweed	*Pyrrocoma liatriformis*	--	SOC	T
Water howellia	*Howellia aquatilis*	--	T	T
Canadian St. John's-wort	*Hypericum majus*	--	--	S
Dwarf rush	*Juncus hemiendytus var. hemiendytus*	--	--	T
Inch-high rush	*Juncus uncialis*	Y	--	S
Marsh muhly	*Muhlenbergia glomerata*	--	--	S
Mousetail	*Myosurus clavicaulis*	Y	--	S

Table 3.8-1: Federally and State-Listed Threatened, Endangered, and Rare Species Occurring on or Near Fairchild AFB

Common Name	Scientific Name	Observed on Main Base	Federal Status[1]	State Status
Wilcox's penstemon	*Penstemon wilcoxii*	--	--	S
American pillwort	*Pilularia americana*	Y	--	T
Austin's knotweed	*Polygonum austiniae*	--	--	T
Idaho gooseberry	*Ribes oxyacanthoides*	--	--	S
Lowland toothcup	*Rotala ramosior*	--	--	T
Black snake-root	*Sanicula marilandica*	--	--	S
Rocky Mountain bulrush	*Scirpus saximontanus*	--	--	T
Northwestern yellowflax	*Sclerolinon digynum*	Y	--	T
Spalding's catchfly	*Silene spaldingii*	Y	T	T
Prairie cordgrass	*Spartina pectinata*	--	--	S
Kidney-leaved violet	*Viola renifolia*	--	--	S

Source: Fairchild AFB 2012a, 2018b
[1] Note that "species of concern" is not a formal designation by the USFWS. However, the Fairchild AFB considers these species in its INRMP.
E = Federally or state-listed endangered species; T = Federally or state-listed threatened species; S = State-listed sensitive species; SOC = species of concern; C = Federal or state candidate for listing; M = Monitor; -- = Not observed or no status.

Of the species listed in Table 3.8-1, two bird species (golden eagle and burrowing owl), one mammal species (white-tailed jackrabbit), and one amphibian species (Columbia spotted frog) of special concern have been observed on the main base (Fairchild AFB 2018b). Other species on the list may potentially use the installation if appropriate habitat is present, or may migrate through.

Golden eagles have been observed on Fairchild AFB in the past and are likely to inhabit the area (Fairchild AFB 2018b). Their habitat includes open wooded country and barren areas, with nests found on cliffs or in large trees. Burrowing owls were historically observed foraging and nesting on the airfield (Fairchild AFB 2009b), and suitable habitat (open grasslands, prairies, and airfields) may still be present (Fairchild AFB 2012a). White-tailed jackrabbits are associated with sagebrush-grassland areas and have been observed on Fairchild AFB in the past (Fairchild AFB 2018b). Although Washington ground squirrels have not been observed, surveys conducted in 2005 determined that suitable habitat (sagebrush-bunchgrass) exists on the installation (Eastern Washington University 2005 in Fairchild AFB 2018b).

The most recent surveys for reptiles and amphibians on Fairchild AFB were conducted in 2013 (Sperry 2013). Of the three species listed in Table 3.8-1, only Columbia spotted frogs were observed, but they were the most commonly detected amphibian species on the installation. They were found in free-flowing ditches and permanent ponds throughout the south base, including ponds and wetlands in the general vicinity of proposed projects T02 and MD02.

Based on the 2010 vegetation surveys by the Natural Heritage Program (Crawford 2010), five of the plant species listed in Table 3.8-1 are known to occur on Fairchild AFB, all of which are associated with vernal pools (see Section 3.5.2). Spalding's catchfly, which is ESA-listed as threatened, has been monitored regularly on Fairchild AFB since 1994 (Fairchild AFB 2018a). No mapped populations occur within proposed project locations. The closest proposed project is MD02, which would occur approximately

360 feet from a mapped area that supports Spalding's catchfly populations. Water howellia, an ESA- and state-listed species is known to occur in Spokane County, but has not been observed on Fairchild AFB.

3.9 CULTURAL RESOURCES

3.9.1 Definition of the Resource

Cultural resources are prehistoric and historic archaeological sites, structures, buildings, artifacts, districts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. This definition includes Native American sacred sites and Traditional Cultural Properties (TCPs) as well as archaeological, and architectural resources. Under Section 106 of the NHPA of 1966, as amended (54 USC Section 300101 et seq.), federal agencies must consider effects to "historic properties" from an action or undertaking. Historic properties are defined (54 USC Section 300308) as cultural resources that are either listed, or eligible for listing, on the NRHP. Under NHPA Section 106, Fairchild AFB is required to consider the effects of its actions on historic properties.

The NHPA Section 106 regulatory compliance process consists of four primary stages: (1) initiation of the Section 106 process (36 CFR Section 800.3); (2) identification of historic properties (36 CFR Section 800.4), which includes identifying historic properties potentially affected by undertakings; (3) assessment of adverse effects (36 CFR Section 800.5), which determines whether the undertaking will affect historic properties and if effects to those properties might be adverse; and (4) resolution of adverse effects (36 CFR Section 800.6) as agreed upon between consulting parties.

Fairchild AFB coordinates NEPA compliance with its NHPA responsibilities to ensure that historic properties and cultural resources are given adequate consideration during the preparation of environmental documents such as this EA.

3.9.2 Existing Conditions

As defined under 36 CFR Section 800.16(d), "the Area of Potential Effect" (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking. For the purposes of this analysis, the term APE is synonymous with ROI for cultural resources.

The Air Force has defined the APE for direct effects to historic properties as the specific footprint areas impacted by the 13 distinct projects located in the main base area, as shown in Figure 2.2-1 and Figure 2.2-2.

The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active Air Force base, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

As discussed below, there are three NRHP-eligible historic buildings, and no NHRP-eligible archaeological or sacred sites or locations of traditional cultural importance within the APE.

Fairchild AFB conducted installation-wide historic architecture surveys in 1990 and the mid-1990s, and architectural studies in 2005 and 2007 focused on the main base (e.g., CH2MHILL 2005; e2M 2008, Heritage Consulting Group 2008).

Affected Environment

Three historic properties— buildings that have been found individually eligible for the NRHP—are located within the direct or indirect APE (Fairchild AFB 2018e). These are:

(1) Building 2025 – A 46,164 square-foot maintenance hangar built in 1943. It contains two bays with a closed flat gabled roof, in a standardized design known as "Air Corps Technical School Type TUH-2."
(2) Building 2050 – A 468,220 square-foot "assembly and repair" hangar built in 1943 as a permanent repair structure according to a standardized plan known as "Air Corps A/C Relay (4 Bay)." It is the largest structure on base, located just north of the flightline.
(3) Building 2245 – a 45,880 square-foot administrative center built in 1943 in the center of the base north of Building 2050.

Also present within the APE is the former Flightline Historic District and 14 formerly contributing buildings. Fairchild AFB executed a Memorandum of Agreement (MOA) with the Washington SHPO in 2012 that mitigated adverse effects from the planned demolition of the hangars comprising the historic district (Fairchild AFB 2012b). The historic flightline is no longer in existence. Six of the original 20 buildings have been demolished, and per the terms of the MOA, the historic district is no longer eligible for NRHP listing.

The remainder of the buildings and structures within the APE are not historic properties (Fairchild AFB 2018e).

Fairchild AFB has conducted various archaeological surveys of the main base in 1988 and 1989. Three historic-period archaeological sites associated with late 19th Century and early 20th Century Homesteading were identified. All of these were found not eligible for listing on the NRHP. None of these occur within the APE. A building survey in 1990 by the Spokane City/County Historic Preservation Office identified and evaluated an historic well that dates to 1889 and is associated with the homestead of Raymond Gee, located in the training district in the southwest corner of the base. The well was determined not eligible for the NRHP with SHPO concurrence (Fairchild AFB 2018e). Upon completion of their work, the Spokane City/County Historic Preservation Office determined that due to the high degree of modern development and ground disturbance, intact, NRHP-eligible resources were highly unlikely on Fairchild's main base. They concluded that no additional archaeological surveys of the installation were warranted unless there was an inadvertent discovery (Fairchild AFB 2018e). Thus, four historic archaeological sites have been identified on the installation, none of which are eligible for listing in the NRHP. No known archaeological sites are within the APE.

A total of 21 federally recognized Tribes consult with Fairchild AFB and associated training areas. Given the various regions and lands Fairchild AFB operates in, consulting Tribes are organized by their geographically separate units and nearby training areas under the management of Fairchild AFB (Fairchild AFB 2018f). Fairchild AFB regularly consults with four federally recognized Tribes as part of the NEPA and Section 106 processes on the main base. These are: (1) the Coeur d'Alene Tribe; (2) the Confederated Tribes of the Colville Reservation; (3) the Kalispel Tribe of Indians; and (4) Spokane Tribe of Indians. Fairchild AFB will consult with these Tribes on the proposed projects. The Native American tribal governments that will be coordinated with regarding the Proposed Action and alternatives are listed in Chapter 6. Appendix A provides AFB correspondence.

No tribal sacred sites or properties of traditional religious or cultural importance have been identified on Fairchild AFB. Based on the location of proposed project sites and the previous archaeological surveys, Fairchild AFB has determined that the proposed individual project APEs contain no identified archaeological sites eligible for listing on the NRHP, historic districts, cemeteries, sacred sites, TCPs, or other tribal resources.

3.10 EARTH RESOURCES

3.10.1 Definition of the 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 topography, physiography, geology, soils, and, where applicable, geologic hazards.

Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features. Geology is the study of the Earth's composition, and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex 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. In appropriate cases, soil properties must be examined for their compatibility with construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981, and is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses. The intent of the FPPA is to minimize the extent that federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The implementing procedures of the FPPA and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) require federal agencies to evaluate the adverse impacts (direct and indirect) of their activities on prime and unique farmland and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse impacts. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. Farmlands of statewide and local importance are lands that do not meet the criteria for prime or unique farmland, but are considered to be important for the production of food, feed, fiber, forage, and oilseed crops by state or local agencies (USDA NRCS 2019).

USDA NRCS soil surveys provide general information about the suitability of mapped soil types for construction uses, such as those associated with the proposed projects. Although on-site evaluation of site conditions is necessary, this information can be helpful in determining whether there are limitations associated with a particular soil map unit. For each specified use, a soil map unit is identified as not limited, somewhat limited, or very limited for a particular use (e.g., construction of small buildings, roads, streets, and utilities) (USDA NRCS 2017a). A site may be limited by factors such as slope, depth to hard bedrock, flooding, ponding, subsidence, and depth to saturated zone.

Geologic hazards are defined as natural geologic events that can endanger human lives and threaten property. Examples of geologic hazards include earthquakes, landslides, rock falls, ground subsidence, and avalanches.

3.10.2 Existing Conditions

Topography and Physiography

The Columbia Basin is characterized by steep river canyons, extensive plateaus, and tall and sinuous ridges (Washington Department of Natural Resources [WDNR] 2019). Rolling hills of loess (wind-deposited soils) cover unglaciated areas in the southern and eastern portions of the basin (United States Forest Service [USFS] 1994). Fairchild AFB is surrounded by mountains and rolling terrain; however, the topography of the installation and its immediate surroundings is generally flat, with an average elevation of 2,430 feet above mean sea level (Fairchild AFB 2018a).

Regional Geology

Fairchild AFB is within the Columbia Plateau physiographic province and the Channeled Scablands area of the Columbia Basin (WDNR 2019). The Columbia Basin was formed by Columbia Plateau lava flows and glacial floodwaters that widened the Spokane River Valley and deposited a layer of gravel up to 500 feet thick. Bedrock underlying the Columbia Basin is basalt that covered and lapped up against Precambrian granitic rock during a series of lava flows in the Miocene Epoch (Fairchild AFB 2018a). Deposits of glacial till, glacial moraine, or glacial outwash blanket the basin, and the Channeled Scablands are characterized by a thin layer of soil alternating with basalt outcroppings and areas of deeper soils (USFS 1994, Fairchild AFB 2018a).

Basalt outcroppings, the result of cooled lava, are the prominent geological features on the installation and can be seen along the eastern boundary. Perched water tables occur in many areas of the installation and are associated with stratified sand and clay soil layers deposited by the historic catastrophic floods. These areas present challenges to infrastructure design, stormwater management, siting of buried utilities and foundations, construction scheduling, and groundwater management (Fairchild AFB 2018a).

Soils

Eleven soil types have been mapped by the USDA NRCS at Fairchild AFB (USDA NRCS 2018; Figure 3.10-1). Table 3.10-1 lists the soil types that occur in the proposed project areas. Some of these soil types require special management considerations and may cause limitations to management actions. The soils within the facility construction, demolition, and renovation areas generally have been previously disturbed by construction or landscaping. Surface cover in these areas is predominantly a combination of pavement, buildings, landscaped lawn, and grassland.

With the exception of the small area of Rocky-Deno complex soils, all mapped soil types within the proposed facility construction, demolition, and renovation areas are considered prime farmland (either "prime farmland" or "prime farmland if irrigated"; USDA NRCS 2019). However, all land within Fairchild AFB is used for military mission purposes, has been previously disturbed and modified due to development, and is not currently available for agricultural use. According to Section 1540(c) (1) of the FPPA, "farmland" does not include land already in or committed to urban development or water storage. Fairchild AFB is identified as an urbanized area on the 2010 Census Urbanized Area Reference Map for Spokane, Washington. Therefore, soils within the proposed facility construction, demolition, and renovation areas are not considered "farmland" and are not subject to the FPPA (U.S. Census Bureau 2010a).

Table 3.10-1: Mapped Soil Types Associated with the Proposed Projects

Proposed Project	Soil Types
A01—Upgrade Intelligence Facility	Phoebe, dry-Bong complex, 0 to 8 percent slopes
OM01—Connect Rambo Gate Search Facility to Water Distribution Branch Line	Cheney ashy silt loam, 0 to 8 percent slopes (Not Limited)
OM02—Construct Potable Water Intertie to City of Spokane Water System	Cheney ashy silt loam, 0 to 8 percent slopes Phoebe, dry-Bong complex, 0 to 8 percent slopes
OM03—Construct Covered Refueler Parking	Phoebe, dry-Bong complex, 0 to 8 percent slopes
OM04—Construct Pull-through Airfield Parking Spots	Phoebe, dry-Bong complex, 0 to 8 percent slopes Cheney ashy silt loam, 0 to 8 percent slopes
OM05—Construct New Hydrant Refueling System	Phoebe, dry-Bong complex, 0 to 8 percent slopes Cheney ashy silt loam, 0 to 8 percent slopes
OM06—Demolish Building 1012	Phoebe, dry-Bong complex, 0 to 8 percent slopes
T01—Renovate Logistics Building	Cheney ashy silt loam, 0 to 8 percent slopes
T02—Construct Water Survival Training Facility	Cheney ashy silt loam, 0 to 8 percent slopes
M01—Add/Alter Thorpe and Rambo Road Gate	Cheney ashy silt loam, 0 to 8 percent slopes
M02—Construct Entomology Facility	Cheney ashy silt loam, 0 to 8 percent slopes
MD01—Demolish USTs and OWSs	Phoebe, dry-Bong complex, 0 to 8 percent slopes (somewhat limited) Cheney ashy silt loam, 0 to 8 percent slopes
MD02—MSA and Pad 5 Drop Zone Electrical Underground	Cheney ashy silt loam, 0 to 8 percent slopes Rocky-Deno complex, 0 to 15 percent slopes (very limited) Caldwell silt loam, 0 to 3 percent slopes (very limited)

Source: USDA NRCS 2018.

Geologic Hazards

Fairchild AFB is at moderate risk from geologic hazards such as volcanism and earthquakes. U.S. Geological Survey (USGS) seismic hazard maps are based on current information about the frequency and intensity of earthquakes. The maps show the levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the force of gravity (percent g) and is proportional to the hazard faced by a particular type of building. In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at values greater than 20 percent g. The 2014 National Seismic Hazard map produced by the USGS shows that Fairchild AFB has a seismic hazard rating of approximately 8 to 16 percent g (USGS 2014).

Affected Environment

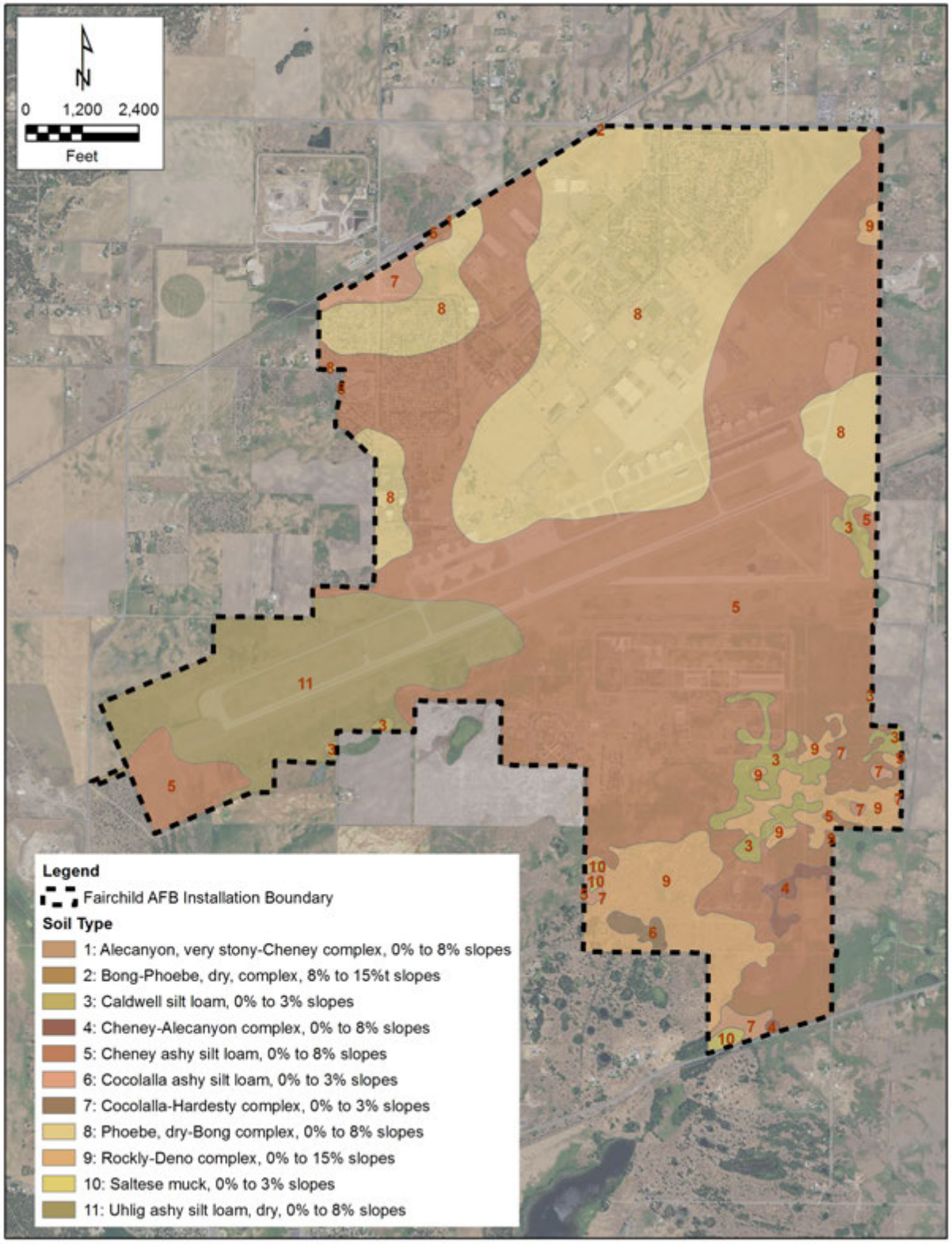

Figure 3.10-1: Mapped Soil Types on Fairchild AFB

3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.11.1 Definition of the Resource

Socioeconomic Resources

Socioeconomics encompasses economies and social elements such as population levels and economic activity. Factors that describe the socioeconomic environment represent a composite of several interrelated and nonrelated attributes. Indicators of economic conditions for a geographic area include demographics, median household income, unemployment rates, employment, and housing data. Data on employment identify employment by industry or trade and unemployment trends. Data on personal income in a region are used to compare the before and after effects of any jobs created or lost as a result of a proposed action. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region. Changes in demographic and economic conditions are typically accompanied by changes in other community components, such as housing availability, education, and the provision of installation and public services, which are also discussed in this section.

Environmental Justice

Analysis of environmental justice evaluates impacts on environmental justice populations (i.e., minority and low-income populations) and is directed by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*. The USAF *Guide for Environmental Justice Analysis under the EIAP* (USAF 2014b) also provides guidance on how to fulfill the requirement for environmental justice analysis. EO 12898 was created to ensure 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. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies. EO 12898 requires each federal agency to identify and address whether their proposed action results in disproportionately high and adverse environmental and health impacts on low-income or minority populations.

3.11.2 Existing Conditions

The ROI for the analysis of socioeconomic impacts for the Proposed Actions is Spokane County. Data for the Spokane-Spokane Valley, Washington Metropolitan Statistical Area and the State of Washington are provided for additional information and areas of comparison. The ROI illustrates socioeconomic characteristics for the area nearest to Fairchild AFB and the geographic area where most impacts from the selected projects would be expected to occur.

Population

Based on data from the U.S. Census Bureau, the estimated population of Spokane County in 2017 was 490,764, which represents a 17.4 percent increase since 2000. The population of the Spokane-Spokane Valley Metropolitan Statistical Area increased at a slightly lower percentage (16.6 percent) than that of Spokane County from 2000 to 2017, while Washington had a greater increase (21.6 percent) (U.S. Census Bureau 2000, U.S. Census Bureau 2010b, U.S. Census Bureau 2017a). Table 3.11-1 shows the total populations for 2000 and 2010, and total population estimates for 2017, for these geographic areas.

Table 3.11-1: Total Population in the Vicinity of Fairchild AFB

Geographic Area	Year			Percentage Change 2000–2017
	2000	2010	2017[a]	
Spokane County	417,939	471,221	490,764	17.4
Spokane-Spokane Valley Metropolitan Statistical Area	469,737[b]	527,753[b]	547,688	16.6
Washington	5,894,121	6,724,540	7,169,967	21.6

Sources: U.S. Census Bureau 2000, U.S. Census Bureau 2010b, U.S. Census Bureau 2017a
[a] The 2017 total population data are estimates from the 2017 ACS 5-Year Population Estimate.
[b] The Spokane-Spokane Valley, Washington MSA consists of Pend Oreille, Spokane, and Stevens Counties in Washington. This MSA did not exist during the 2000 and 2010 Censuses; therefore, the total population for the MSA in 2000 and 2010 was calculated by adding the individual 2000 and 2010 populations of the three counties.

The workforce population of Fairchild AFB in 2016 was 7,565, including military and civilian personnel and dependents. Total employment at Fairchild AFB consisted of 5,248 personnel, including 2,875 full-time military personnel, 957 part-time Guardsmen, 577 government civilian personnel, and 839 other installation personnel (Fairchild AFB 2018a). Additionally, Fairchild AFB supports 13,000 retirees living within 130 miles of the installation, and 18,000 retirees in the greater inland northwest area of eastern Washington, northern Idaho, and western Montana (Fairchild AFB 2014a).

Economic Activity (Employment and Earnings)

In 2017, the percentage of persons 16 years and over in the armed forces in the Spokane County labor force was 0.6 percent. Persons in the armed forces made up similar percentages of the labor forces of the Spokane-Spokane Valley Metropolitan Statistical Area and Washington (U.S. Census Bureau 2017b).

Table 3.11-2 shows the regional employment by industry near Fairchild AFB. The total number of employed people in the civilian labor force in Spokane County in 2017 was 236,389. The industry employing the highest percentage of the civilian labor force in Spokane County, Spokane-Spokane Valley Metropolitan Statistical Area, and Washington was the educational services and health care and social assistance industry. This industry employed more than 25 percent of the labor force in Spokane County and the Spokane-Spokane Valley Metropolitan Statistical Area, but a slightly smaller proportion of the labor force in Washington (U.S. Census Bureau 2017b). The top private employers in the greater Spokane area are Providence Healthcare, Multi-Care Inland Northwest Region, and Kalispel Tribal Economic Authority/Northern Quest Resort and Casino. The top public employers are Fairchild AFB, State of Washington, and Spokane Public Schools (GSI 2019).

The total economic impact of Fairchild AFB during FY 2015 was approximately $420 million. This includes payroll for military and civilian personnel of more than $232 million, creation of 2,314 jobs with an estimated value of approximately $100 million, and local expenditures of approximately $88 million (Fairchild AFB 2015c).

The per capita income in Spokane County, the Spokane-Spokane Valley Metropolitan Statistical Area, and Washington was $28,325, $27,938, and $34,869, respectively (U.S. Census Bureau 2017b).

As of December 2018, the unemployment rate (not seasonally adjusted) in Spokane County (preliminary), Spokane-Spokane Valley Metropolitan Statistical Area (preliminary), and Washington was 5.8 percent, 6.0 percent, and 4.8 percent, respectively (Bureau of Labor Statistics 2019).

Table 3.11-2: Employment by Industry in the Vicinity of Fairchild AFB

Category	Spokane County	Spokane-Spokane Valley MSA	Washington
Population 16 years and over in the labor force	238,896	261,446	3,685,819
Percent of labor force in the Armed Forces	0.6	0.6	0.9
Population of employed persons in the civilian labor force	236,389	258,908	3,636,944
Percent Employed Persons in Civilian Labor Force (by Industry)			
Agriculture, forestry, fishing and hunting, and mining	1.2	1.6	2.6
Construction	5.7	6.0	6.3
Manufacturing	8.3	8.5	10.3
Wholesale trade	3.4	3.3	2.9
Retail trade	12.6	12.6	11.8
Transportation and warehousing, and utilities	4.9	4.9	5.2
Information	1.6	1.5	2.3
Finance and insurance, and real estate and rental and leasing	7.0	6.8	5.4
Professional, scientific, and management, and administrative and waste management services	9.2	9.1	12.6
Educational services, and health care and social assistance	26.5	26.1	21.6
Arts, entertainment, and recreation, and accommodation and food services	9.8	9.6	9.2
Other services, except public administration	5.0	4.9	4.6
Public administration	5.1	5.2	5.1

Source: U.S. Census Bureau 2017b
Note: The data presented in this table are estimates from the 2012–2017 American Community Survey.

Housing

Three housing options are available for Fairchild AFB personnel: on-installation privatized military family housing and unaccompanied housing, and off-installation housing. Fairchild AFB has 641 privatized military family housing units located in four neighborhoods on the installation. There are 10 on-installation dormitories with 472 total rooms for unaccompanied personnel (Fairchild AFB 2014a).

The U.S. Census Bureau estimated that there were 211,007 housing units in Spokane County in 2017 (U.S. Census Bureau 2017c), of which approximately 16,012 units were vacant (U.S. Census Bureau 2017d). The Spokane-Spokane Valley Metropolitan Statistical Area, which includes Spokane County, had 240,678 total housing units (U.S. Census Bureau 2017c), of which 22,512 were vacant (U.S. Census Bureau 2017d). The homeowner vacancy rates in Spokane County and the Spokane-Spokane Valley Metropolitan Statistical Area were 1.6 percent and 1.8 percent, respectively, while the rental vacancy rates were 4.1 percent and 4.3 percent, respectively (U.S. Census Bureau 2017c).

Education

Spokane County is within Washington State Educational Service District 101, and includes all or part of 18 school districts. Five school districts are within approximately 5 miles of Fairchild AFB: Medical Lake (five schools), Cheney (10 schools), Reardan-Edwall (two schools), Great Northern (one school), and Spokane (47 schools). Additionally, as of February 2018 there were three private schools in the Reardan-Edwall School District with 99 total students, and 17 private schools within Spokane Public Schools district boundaries with 3,818 total students (State of Washington OSPI 2018). Spokane Public Schools is the largest of these districts, with 31,043 students in pre-kindergarten through grade 12 during the 2018–2019 school year (State of Washington OSPI 2019). Fairchild AFB is within the Medical Lake School District. During the 2018–2019 school year, the district's total student enrollment was 2,000 students. The district has two elementary schools, including Michael Anderson Elementary School on Fairchild AFB; one middle school; one high school; and one alternative high school. Michael Anderson Elementary School serves pre-kindergarten through grade 5, and as of January 2018 had a total of 498 students (State of Washington OSPI 2019).

Installation and Public Services

Law enforcement services (police) at Fairchild AFB are provided by the 92d Security Forces Squadron, and fire protection and emergency services through the 92d Civil Engineer Squadron (Fairchild AFB Fire Department). The fire department also assists with emergencies in the surrounding community. The 92d Medical Group operates the outpatient medical treatment facility (clinics) at Fairchild AFB for active-duty personnel, dependents, and retirees. The 92d Medical Group offers primary/family health care, pediatrics, flight medicine, dental, pharmacy, physical therapy, and mental health, and laboratory services, as well as 24-hour ambulance service on the installation (Fairchild AFB 2014a). Other installation services are under the direction of the 92d Force Support Squadron, including operation of two on-installation dining facilities and a fitness/aquatic center, and provision community and family support services to installation personnel.

Public services in Spokane County consist of law enforcement, fire protection, emergency medical services, and medical services. The Spokane County Sheriff's Office provides law enforcement services for the county and has civil and patrol divisions, as well as an air support unit. Other law enforcement agencies in the area include the City of Airway Heights Police Department. Spokane County contains 11 fire districts and seven municipal fire departments, including the cities of Airway Heights, Medical Lake, and Spokane, which provide fire protection services in the county (Spokane County 2019b). Additionally, Spokane International Airport has a fire department. Emergency medical services are provided by the county fire districts and municipal fire departments, as well as a few private entities. There are eight hospitals and a rehabilitation institute in Spokane County (Spokane Cares 2019). The closest emergency rooms to Fairchild AFB are at Providence Sacred Heart Medical Center and Deaconess Medical Center in Spokane, which are approximately 11 to 12 miles from the installation, respectively.

Environmental Justice

Demographic information on minority and low-income populations in Spokane County, Washington, and the United States is presented in Table 3.11-3. Minority population levels within Spokane County are less than those in Washington and the United States. Within Spokane County, the population reporting to be a race other than white was 14.7 percent of the total, which is substantially less than the 30.2 percent for Washington and the 38.5 percent for the United States (U.S. Census Bureau 2017a). The Hispanic or Latino population in the Spokane County (5.4 percent) is also substantially less than the population in Washington and the United States (12.3 percent and 17.6 percent, respectively). The percentage of individuals below the poverty level in Spokane County (15.2 percent) is slightly higher than in Washington (12.2 percent), but less than in the United States as a whole (14.6 percent). The number of

families below the poverty level in Spokane County is 9.5 percent, which is slightly higher than for Washington (8.0 percent), but lower than for the United States as a whole (10.5 percent) (U.S. Census Bureau 2017b).

Table 3.11-3: Minority, Low-Income, and Poverty Status

Demographic	Spokane County	Washington	United States
Total Population	490,764	7,169,967	321,923,363
Percent White	85.3	69.8	61.5
Percent Black or African American	1.6	3.5	12.3
Percent American Indian, Alaska Native	1.2	1.1	0.7
Percent Asian	2.2	8.0	5.3
Percent Native Hawaiian and Other Pacific Islander	0.5	0.6	0.2
Percent Some Other Race	0.0	0.1	0.2
Percent Reporting Two or More Races	3.8	4.6	2.3
Percent Hispanic or Latino	5.4	12.3	17.6
Percent of Individuals Below Poverty	15.2	12.2	14.6
Percent of Families Below Poverty	9.5	8.0	10.5
Per Capita Income	$28,325	$34,869	$31,177
Median Household Income	$52,159	$66,174	$57,652

Sources: U.S. Census Bureau 2017a, 2017b

3.12 INFRASTRUCTURE

3.12.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as “urban” or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. The infrastructure components discussed in this section include utilities, solid waste management, and the transportation system. Utilities include electrical supply, water supply, sanitary sewer system, natural gas supply, liquid fuel supply, stormwater drainage system, and communications system. Solid waste management primarily relates to the availability of landfills to support a population’s solid waste needs. The transportation system addresses the capacity of roads, parking areas, and installation access gates to support vehicular movements.

3.12.2 Existing Conditions

Electrical Supply

Electrical power at Fairchild AFB is provided by the Bonneville Power Administration through Avista Utilities from two on-installation 115-kilovolt (kV) substations (North and South). Both substations have three feeder circuits each and distribute power at 13.2 kV. The electrical system consists of the two substations, power lines (underground and overhead), high-voltage switches, junction boxes, and

transformers. Annual maintenance on the North and South substation infrastructure is performed by Bonneville Power Administration (Fairchild AFB 2012a). The estimated maximum peak electrical loading for Fairchild AFB is 10.8 megawatts (MW) with 3.78 MW of headroom. The average electrical demand of 7.02 MW is 65 percent of the peak load. In 2010, HQ AMC determined that the electrical system at Fairchild AFB was adequate (Fairchild AFB 2014a). In addition, the installation has adequate backup power systems to support priority facilities, as outlined in the installation's contingency response plan and authorized in AFI 32-1062. The electrical supply and distribution system does not represent a constraint to future development on Fairchild AFB; however, as with any infrastructure, repairs and upgrades are necessary to support current and future activities.

Water Supply

Potable water is provided to Fairchild AFB by the Fort George Wright Annex well complex, which is located northeast of Spokane International Airport. Five pumps at the well complex have a total capacity of 4,420 gallons per minute or 6.4 million gallons per day (mgd). The wells at the complex draw groundwater from both the Spokane Valley-Rathdrum Prairie Aquifer and the Latah (Hangman) Creek Aquifer, and feed the Geiger Reservoir. Water from the reservoir is then piped to storage tanks at the installation via a 16-inch City of Spokane water transmission line that enters the base in vicinity of Eaker Avenue and Rambo Road.

The installation has a total water storage capacity of 2.16 million gallons. The water storage system consists of three elevated water storage tanks and 10 ground storage tanks (Fairchild AFB 2011, 2014a). The Fort George Wright Annex well complex, combined with the on-installation water storage capacity, provides an adequate supply of potable water to meet duration, flow rate, and pressure requirements for industrial and domestic consumption and fire protection (Fairchild AFB 2014a). If water demand at the installation exceeds the supply available from the well complex, two backup groundwater sources for potable water supply (i.e., Well 2 and an emergency intertie with the City of Spokane located northeast of Spokane International Airport) could supply an additional 4.6 mgd of potable water to the installation (Well 2 provides 1 mgd and the intertie provides 3.6 mgd). In 2017, the average water demand at the installation was 1.4 mgd, with a peak water demand of 5.2 mgd (Fairchild AFB 2017).

Sanitary Sewer System

The sanitary sewer system at Fairchild AFB consists of lateral lines from buildings, lift stations, 605 sewer manholes, and 284,190 linear feet of sewer collection mains. The Spokane Wastewater Management Department treats most of the wastewater from the installation at the Riverside Park Water Reclamation Facility. The only exceptions are three mounded drain field systems that Fairchild AFB operates and maintains on the south side of the installation. The Riverside Park Water Reclamation Facility, located on the east bank of the Spokane River, currently processes approximately 34 mgd of sewage, which is approximately 23 percent of the 150 mgd peak capacity (City of Spokane 2019).

The maximum wastewater discharge capacity of the installation's sanitary sewer system is 1.8 mgd. In 2012, daily discharges from the installation averaged 0.68 mgd and peaked in March and April at 1.25 mgd. The average daily discharge was 39 percent of the installation system capacity and 70 percent of the capacity at peak daily discharge. The overall condition of the sanitary sewer system is considered adequate for current mission requirements; however, surveys of the system have identified several inflow and infiltration issues that require attention (Fairchild AFB 2014a).

Natural Gas Supply

The natural gas system at Fairchild AFB consists of gas lines (steel and polyethylene piping), valves, vents, and meters. The steel pipes generally date from 1960, while the polyethylene pipes are less than 15 years old. The steel gas lines are protected from corrosion by a cathodic protection system. The main meter for natural gas is located at Graham Gate. Two contractors, Honeywell and Avista Utilities, currently own the natural gas system pipelines on the installation (Fairchild AFB 2014a).

Liquid Fuel Supply

The liquid fuel storage system at Fairchild AFB consists of a filtration house, bulk storage farm with three tanks, transfer system, and three hydrant refueling systems with operating storage tanks, ground products storage system, and two Government-owned vehicle service stations. Liquid fuel is received by the installation from both commercial pipeline and tank trucks. Fairchild AFB has a liquid fuel capacity of approximately 4.6 million gallons with 1.8 million gallons of storage demand, resulting in an available capacity of 61 percent. The distribution system can receive approximately 480,000 gallons per day (gpd), with an average demand of 360,000 gpd. In 2010, HQ AMC determined that the fuel systems at Fairchild AFB were adequate (Fairchild AFB 2014a).

Stormwater Drainage System

The stormwater drainage system at Fairchild AFB consists of stormwater collection catch basins, drywells, collection piping, lagoons, ditches, and other stormwater conveyances. The installation's system is divided into eight stormwater basins, as discussed in Section 3.5.2 The existing stormwater conveyance system covers the central part of the installation and flightline areas. The southern portion of the installation has a stormwater conveyance system serving the SERE School campus. The remainder of the developed area allows sheet flow into open drainage ditches. Perched groundwater is present in many areas of the installation, and localized flooding/ponding may occur, especially in the spring (Fairchild AFB 2014a).

Fairchild AFB operates under an NPDES Stormwater Multi-Sector General Permit and a required SWPPP. The stormwater drainage system is managed in accordance with the installation's SWPPP (Fairchild AFB 2014a). The Multi-Sector General Permit does not authorize stormwater discharges associated with construction activities; therefore, a separate Notice of Intent for a NPDES Construction General Permit and SWPPP must be filed with USEPA for all new construction activities that disturb one or more acres.

Communications System

The communications system at Fairchild AFB is capable of supporting voice, data, video, wireless, land mobile radio, aircraft communications, and security systems. Backbone communications components and technology currently used are mostly copper and dated. As facilities are modernized, renovated, or constructed, new fiber communications are included in this process. The system includes a manhole/duct system, which is used to distribute copper and fiber cable throughout the installation. In remote areas of the installation, the fiber and copper cables are direct buried and do not use this system. The installation's telephone system utilizes multiple switches to handle a variety of installation telephone requirements. The three main switches are located at Buildings 1304, 2248, and 9000. These switches are connected via a Synchronous Optical Network backbone (Fairchild AFB 2014a).

Solid Waste Management

Solid waste at Fairchild AFB is managed via an *Integrated Solid Waste Management Plan* in accordance with AFI 32-7042, *Waste Management*. The Solid Waste Management and Recycling Program includes off-installation solid waste disposal and a full-service recycling center on the installation. A contractor

manages the recycling center at Building 2420. Under agreement with the City of Spokane and Spokane County, all municipal solid waste is disposed of at the Spokane Regional Waste-to-Energy Facility. Solid waste collection is completed by a contractor. Construction and demolition debris at the installation is recycled to the greatest extent possible with the remainder disposed of at local permitted disposal facilities (Fairchild AFB 2014a).

Transportation System

There are 9.8 million square feet of roadway surfaces on Fairchild AFB. The roads on the installation are adequate and meet current mission needs. The primary arterial roads moving traffic onto and off the installation are Mitchell Drive and Rambo Road, which connect with Bong Street, Arnold Street, Fairchild Street, and Eaker Avenue. All other roads on the installation feed into these primary roads. The main secondary roads include Strategic Air Command Boulevard, West Castle Street, and O'Malley Avenue. Arnold Street provides immediate access to the flightline at Fairchild AFB. The 2008 Transportation Plan for the installation provides specific recommendations and plans for future road and parking improvements based upon known problem areas and future facilities. Some of the recommended projects from the plan have already been constructed (Fairchild AFB 2014a).

Regional access to Fairchild AFB is provided by Interstate 90 (I-90), U.S. Highway 2 (Route 2), and Washington State Highway 902. Route 2 provides the primary access to the installation and runs east-west, north of the installation. South of the installation, I-90 runs east-west out of Spokane. Vehicle access to the installation is provided through three primary gates: Main Gate, Rambo Gate, and Thorpe Gate. The main gate is located off Route 2 and is open 24 hours a day. Rambo Gate, which is on the east side of the installation on South Rambo Road, is for commercial vehicles and DoD badge holders, and is open from 6 a.m. to 8 a.m. (inbound only) and 4 p.m. to 6 p.m. (outbound only) Monday through Friday. Thorpe Gate in the southeastern part of the installation serves personnel working in the southern portion of the installation, as well as personnel living in off-installation communities, such as the cities of Cheney and Medical Lake. Thorpe Gate is open 6 a.m. to 8 a.m. (inbound only) and 4 p.m. to 6 p.m. (outbound only) Monday through Friday for DoD badge holders. Assuming a worst-case scenario processing rate of 134 vehicles per lane per hour, the existing five lanes across the three gates providing access to the installation operate at capacity (668 vehicles per hour) and at times operate over capacity during peak hours. McFarland Gate and Graham Gate are located on the west side of the installation, but are only used as contingency gates (Fairchild AFB 2014a).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the potential environmental consequences that are likely to occur as a result of implementation of all alternatives that are being considered and analyzed. Impacts described in this chapter are evaluated in terms of type (positive/beneficial or adverse), context (setting or location), intensity (none, negligible, minor, moderate, severe), and duration (short-term/temporary or long-term/permanent). The type, context, and intensity of an impact on a resource are explained under each resource area. Unless otherwise noted, short-term impacts are those that would result from the activities associated with a project's construction and/or demolition phase, and that would end upon the completion of those phases. Long-term impacts are generally those resulting from the operation of a proposed project.

Proposed projects are discussed collectively, with additional discussion, where needed, to describe potential impacts for pertinent individual projects.

4.2 LAND USE

Impacts to land use would be considered significant if the proposed projects:

- Are inconstant with or fail to comply with applicable land use plans or policies.
- Preclude the viability of one or more existing land uses.
- Preclude the continued use or occupation of an area.
- Are incompatible with adjacent land uses to the extent that public health or safety is threatened.
- Conflict with planning criteria established to ensure the safety and protection of human life and property.
- Disturb, interfere with, or violate an LUC that is part of the remedial action taken to address contamination at an ERP site.

4.2.1 Proposed Action/Alternatives

The proposed projects would occur entirely on Fairchild AFB property. In general, the selected projects would comply and be consistent with existing and future installation land use plans and policies, and the vision for Fairchild AFB as described in the IDP. The majority of the proposed projects would have no effect on existing land use, either because the project would be an expansion or alteration of an existing facility with no change in use, the project would not fall into a particular land use category (e.g., utility upgrades or removal of USTs), or the project would be the same land use category as the existing use on the site. For projects requiring a change in land use designation, short-term, minor, adverse impacts would occur.

Project OM04 (Construct Pull-through Airfield Parking Spots) would include new paving within the airfield area amounting to approximately 11 acres, including approximately 2 acres adjacent to the airfield that is currently mapped as open space. The land use designation in this area would change from open space to airfield/industrial, which is reflected in the Future Land Use Plan, and the project would be compatible with adjacent land uses. Therefore, impacts would be minor.

Project T02 (Construct Water Survival Training Facility; both action alternatives) would be constructed in an area, that is predominantly mapped as open space. The land use in this area would change from open space to an indoor training use, which would be in line with the Future Land Use Plan, and the project would be compatible with adjacent land uses. Therefore, impacts would be minor.

Environmental Consequences

Project M02 (Construct Entomology Facility) would be constructed in an area that is currently mapped as open space. The land use in this area would change from open space to industrial, which is reflected in the Future Land Use Plan, and the project would be compatible with adjacent land uses. Therefore, impacts would be minor.

No land use changes would be required for any action alternatives under Projects A01, OM01, OM03, OM05, OM06, T01, M01, MD01, or MD02. Therefore, there would be no associated effects on land use.

Project OM06 (Demolish Building 1012) would result in the removal of a structure that is currently within an airfield obstruction area and requires an associated waiver. Demolition of this structure would have a minor beneficial impact on land use by eliminating the incompatible airfield obstruction.

Proposed projects that would occur along the installation boundary include OM01 (Connect Rambo Gate Search Facility to Water Distribution Branch Line), OM02 (Construct Potable Water Intertie to City of Spokane Water System), M01 (Add/Alter Thorpe and Rambo Road Gate), and T01 (Renovate Logistics Building). These projects would not have an effect on the existing land use in these areas, and therefore would not result in incompatibilities with adjacent off-installation land uses. Construction of the primary base gate could result in increased traffic volumes on adjacent roadways, as discussed in Section 4.12, but these increases would not threaten public health and safety.

All of the proposed projects would be subject to installation-wide entry control and dig permit LUCs. None of the projects or alternative would interfere with adherence to these LUCs. The installation's formal dig permit process would be followed for all projects that involve soil disturbance.

Some of the selected projects would be constructed within ERP sites or QD arcs, and would be required to adhere to the appropriate land use restrictions when necessary. In addition, all projects taking place within an area with established LUCs would be subject to the Work Clearance Request process. Discussion of potential impacts associated with LUCs for ERP sites is provided in Section 4.7.

Beneficial impacts on land use would be expected from efficient use of installation land, particularly through demolition of aging, inadequate, and underused facilities (Project OM06 [Demolish Building 1012] and Project M02 [Construct Entomology Facility]).

Because the majority of the proposed projects would have no effect on land use, and because none of the proposed projects and alternatives would have a substantive change in land use, preclude use of the property or adjacent properties, fail to comply with applicable land use plans or policies, or threaten public health and safety, impacts to land use would not be significant.

4.2.2 No Action Alternative

Under the No Action Alternative, none of the proposed facility and infrastructure construction projects, renovation/repair projects, or facility demolition projects would be implemented. Therefore, there would be no associated impacts to land use designations or compatibility at Fairchild AFB. Because Building 2012 would not be demolished under this alternative, the building would continue to be an airfield obstruction, and would continue to require a waiver for this incompatible land use.

4.3 NOISE

This section analyzes the effects of noise from construction of the proposed projects. Operation of the proposed projects would have no long-term significant impacts on the overall noise environment. Noise impacts would be considered significant if they were to lead to a violation of any federal, state, or local noise ordinance, or substantially increase areas of incompatible land use outside the installation.

Noise would be generated from the outdoor activities of construction, demolition, and trenching. In order to evaluate the overall noise impacts, projects scheduled to occur at the same time were evaluated

together to determine a combined impact. A variety of equipment types could be used during these project activities, which can be found in Table 4.3-1, along with their associated L_{Amax} sound levels at a distance of 50 feet. The noise levels listed in this table were used in the analysis.

It was assumed that up to three pieces of the loudest equipment could be used concurrently, and that projects occurring in the same year could create concurrent noise emissions. Therefore, for each planned activity, the three loudest pieces of equipment were considered to operate continuously for an hour, and planned activities that could occur during the same time period were evaluated together. Sound pressure levels were combined logarithmically based on the nature of dB. For example, a single grader at 50 feet is 85 dB(A), but three operating at the same location would be 90 dB(A) at 50 feet. Sound levels were then calculated using point source propagation techniques for the decrease due to distance at the location of concern.

The baseline noise contours (shown in Figure 3.3-1, along with proposed project locations) were used to determine the contribution of noise due to aircraft operations. The noise levels were calculated using mapping and distance to the locations of concern. A conservative approach was used; the DNL values were assumed to be equivalent to L_{Aeq} even though the construction noise levels are non-continuous, with noisy events not planned to occur during the evenings. The values calculated for construction equipment and aircraft operations were combined with background levels and the average aircraft noise levels, as shown by the noise contours, to determine an overall level at all areas of concern.

Project locations are shown in Figure 3.3-1 (see Figure 2.2-1 and Figure 2.2-2 for corresponding project labels).

Table 4.3-1: Maximum Sound Levels from Typical Construction Equipment

Equipment Description	L_{max} Noise Limit at 50 feet, dB, slow	Equipment Description	Lmax Noise Limit at 50 feet, dB, slow
All other equipment >5 hp	85	Gradall	85
Auger Drill Rig	85	Grader	85
Backhoe	80	Horizontal Boring Hydraulic Jack	80
Bar Bender	80	Hydra Break Ram	90
Blasting	94	Impact Pile Driver (diesel or drop)	95
Boring Jack Power Unit	80	In situ Soil Sampling Rig	84
Chain Saw	85	Jackhammer	85
Clam Shovel	93	Mounted Impact Hammer (hoe ram)	90
Compactor (ground)	80	Paver	85
Compressor (air)	80	Pickup truck	55
Concrete Batch Plan	83	Pneumatic Tools	85
Concrete Mixer Truck	85	Pumps	77
Concrete Pump	82	Rock Drill	85
Concrete Saw	90	Scraper	85

Table 4.3-1: Maximum Sound Levels from Typical Construction Equipment

Equipment Description	L_{max} Noise Limit at 50 feet, dB, slow	Equipment Description	Lmax Noise Limit at 50 feet, dB, slow
Crane (mobile or stationary)	85	Slurry Paint	78
Dozer	85	Slurry Trenching Machine	82
Dump Truck	84	Soil Mix Drill Rig	80
Excavator	85	Tractor	84
Flat Bed Truck	84	Vacuum Street Sweeper	80
Front End Loader	80	Vibratory Concrete Mixer	80
Generator (25 kVA or less)	70	Vibratory Pile Driver	95
Generator (more than 25 kVA)	82	Welder	73

Source: Thalheimer 2000.
hp = horsepower; kVA = kilovolt-ampere

4.3.1 Proposed Action/Alternatives

Because multiple proposed projects could occur at the same time, projects were evaluated collectively rather than individually. Within each construction year, all projects planned for that year were assumed to occur simultaneously in order to evaluate the worst-case scenario, as summarized below:

Year 2020

- Project T01 (Renovate Logistics Building)
- Project M02 (Construct Entomology Facility)

Year 2021

- Project A01 (Upgrade Intelligence Facility)
- Project T02 (Construct Water Survival Training Facility)
- Project M01 (Add/Alter Thorpe and Rambo Road Gate)
- Project MD01 (Demolish USTs and OWSs)

Year 2022

- Project OM01 (Connect Rambo Gate Search Facility to Water Distribution Branch Line)
- Project OM02 (Construct Potable Water Intertie to City of Spokane Water System)
- Project OM06 (Demolish Building 1012)
- Project MD02 (MSA and Pad 5 Drop Zone Electrical Underground)

Year 2023

- Project OM03 (Construct Covered Refueler Parking)
- Project OM04 (Construct Pull-through Airfield Parking Spots)
- Project OM05 (Construct New Hydrant Refueling System)

Noise impacts to the surrounding area would only occur due to outdoor activity, since indoor noise would be abated by the structure. For each project it was assumed that three pieces of heavy equipment could be operating at the same time. Using a conservative estimate of 85 dB(A) for each piece of equipment results in a sound level of 90 dB(A) at 50 feet. The closest sensitive receptor for the larger base projects would be the residences on the southeast corner of Nebraska Avenue. Two projects near the main gate would be closer to other residences, but the overall impact would be less due to the increase in distance to the larger projects. As such, the sensitive receptor location on Nebraska Avenue would be the area where the greatest noise impact could occur. This is the closest sensitive receiver and much closer than other sensitive receivers in the area, such as Hallett Elementary, Medical Lake High School, Fairchild Chapel, and Miller Park. As such, noise levels from the proposed projects would be much less at these other locations.

All projects in the same year were summed to determine an overall, cumulative noise level impact by year. A background noise level of 38 dB(A) for daytime operations was also logarithmically summed, as well as a value of 55 dB(A) for aircraft operations. Table 4.3-2 shows the resulting predicted noise levels for the closest sensitive receptor.

Table 4.3-2: Combined Noise Levels by Year, dB(A) as LA_{eq}

Year	Background	Aircraft Operations	Construction	Total Combined Sound Level
2020	38	55	53	57
2021	38	55	50	56
2022	38	55	52	57
2023	38	55	57	59

For all project years except 2023, aircraft operations would be the greatest contributor to noise levels. Noise levels are only expected to increase at residences by 1 to 4 dB(A). It generally takes a 5 dB(A) change for the noise increase to be noticeable. Therefore, it is expected that construction noise from the proposed projects would result in only short-term, negligible to minor adverse impacts on the noise environment. The short-term impacts from noise generated by heavy equipment during facility construction, demolition, and renovation may be heard as discrete sounds, but would not increase the overall noise levels significantly. Construction workers, who would be exposed to construction noise at closer range, would wear hearing protection, as required, in accordance with applicable laws and regulations.

The most common impact associated with exposure to elevated noise levels is public annoyance. Based on the noise metric DNL (Schultz 1978; Finegold et al. 1994), when subjected to a DNL of 65 dB(A), approximately 12 percent of persons exposed will be “highly annoyed” by the noise. At levels below 55 dB(A), the percentage of annoyance is correspondingly lower (less than 3 percent). The percentage of people annoyed by noise never drops to zero (some people are always annoyed). As another comparison, the Federal Highway Administration uses a value of 67 dB(A) L_{Aeq} as the noise impact threshold for construction or highway operations. The maximum estimated noise levels for the proposed projects are well below this threshold.

Environmental Consequences

The analysis shows that the proposed projects would not lead to substantial annoyance impacts or a violation of the federal, state, or local noise ordinances listed in Section 3.3.2. Noise levels would not affect areas of incompatible land use on or adjacent to Fairchild AFB. Noise generation would last only for the duration of construction and demolition activities, and could be minimized through measures such as restricting these activities to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and using equipment with exhaust mufflers. Therefore, impacts associated with noise generation would not be significant.

4.3.2 No Action Alternative

The No Action Alternative would result in no change to the local noise levels, which would remain at about 55 dB(A) at the nearest residences.

4.4 AIR QUALITY

This section analyzes the potential impacts to air quality from construction of the proposed projects. Impacts would be considered significant if the proposed projects were to interfere with the state's ability to maintain the NAAQS, or if they were to result in a violation of any federal, state, or local air regulation.

4.4.1 Proposed Action/Alternatives

The proposed projects would have short-term and long-term, minor impacts on local air quality. The short-term impacts would predominantly be from fugitive dust and equipment exhaust generated by heavy equipment and worker transport during construction and demolition. The release of pollutants during certain construction activities, such as painting, would also result in short-term impacts. Although not part of this project, long-term impacts could occur from activities such as the heating of proposed buildings.

Because all of the proposed projects would occur within an area that is in full attainment for the NAAQS, the general conformity rules do not apply. However, the general conformity *de minimis* thresholds, based on emission releases, were used as significance indicators to determine the level of impacts under NEPA and if additional analysis would be required.

Emissions have been analyzed for each construction calendar year, based on the expected timelines of proposed projects. A conservative approach has been used, in which emissions from the largest of each type of project (construction, demolition, renovation, and trenching) have been calculated, and then scaled to estimate the emissions for similar projects.

The USAF Air Conformity Applicability Model (ACAM) was used to estimate air emissions from the proposed projects. Comprehensive outputs from the model runs have been included in Appendix C. Table 4.4-1 lists the total projected direct and indirect annual emissions for each year. These totals include emissions from fugitive dust, construction exhaust, vehicle exhaust, and worker transport.

Table 4.4-1: Total Direct and Indirect Annual Emissions for the Proposed Actions (Tons/Year)

Year	VOC	SOx	NOx	CO	PM_{10}	$PM_{2.5}$	Pb
2020	1.7	0.02	9.8	10.2	23.1	0.45	0.00
2021	3.0	0.05	19.6	19.8	46.9	0.89	0.00
2022	1.9	0.03	11.3	12.7	15.4	0.48	0.00
2023	1.8	0.02	10.7	11.1	26.8	0.50	0.00

Environmental Consequences

The *de minimis* thresholds for all criteria pollutants are 100 tons/year. Note that Volatile Organic Compounds (VOCs) are not a criteria pollutant but have been included for completeness. As shown in the table, emissions from the proposed actions for each year are well below the *de minimis* thresholds for all criteria pollutants; therefore, impacts from these planned actions would be minor.

Because no new stationary sources of air emissions are proposed at this time, no air permitting requirements are necessary. Some minor new stationary source emissions, such as emergency generators and boilers and heaters, might become necessary in the future. Any new stationary sources of air emissions would fully comply with SRCAA permitting requirements. Other SRCAA Regulation I non-permitting requirements, such as controlling fugitive dust and open burning, would be carefully monitored and controlled. All persons responsible for any operation, process, handling, transportation, or storage facility that could result in fugitive dust would take reasonable precautions to prevent such dust from becoming airborne. Reasonable precautions include using water to control dust from road grading or land clearing and control of open burning. The proposed projects would proceed in full compliance with current SRCAA Regulation I requirements, with compliant practices and products. Examples of such requirements include the following:

- Outdoor burning (SRCAA Regulation I, Article VI, 6.01).
- Particulate matter; preventing particulate matter from becoming airborne (SRCAA Regulation I, Article VI, 6.05).
- Standards for controlling particulate matter on paved surfaces (SRCAA Regulation I, Article VI, 6.14).
- Standards for controlling particulate matter on unpaved surfaces (SRCAA Regulation I, Article VI, 6.15).

Although not a criteria pollutant, the emissions of carbon dioxide equivalent (CO_2e) were evaluated and are shown in Table 4.4-2. Issues of temperature and precipitation trends were evaluated to determine if the proposed projects would be affected by climate change. Determination of actual incremental impacts due to the release of GHGs due to individual proposed projects is not practical and was not attempted due to a lack of consensus on how to measure or predict such impacts from small individual releases.

Table 4.4-2: Annual GHG Emissions as CO_2e from Proposed Actions

Scale	CO_2e Emissions (MMT)	Percent Increase from Proposed Action (by Year)			
		2020	2021	2022	2023
United States	5,189	0.000035	0.000071	0.000047	0.000038
Washington State	79.3	0.00256	0.00518	0.00344	0.00276
Proposed Action					
Year = 2020	0.002027				
Year = 2021	0.004109				
Year = 2022	0.002724				
Year = 2023	0.002188				

Sources: U.S. Energy Information Administration 2018; ACAM modeling results.
MMT = million metric tons

Environmental Consequences

Washington is located in the northwestern climate region of the United States, which is beginning to experience changes in the timing of streamflow, changing snowmelt, and reduced supply of water. The sensitivity of agriculture in the northwest to climate change stems from its dependence on irrigation water; a specific range of temperatures, precipitation, and growing seasons; and the sensitivity of crops to temperature extremes. Average annual temperatures during the last century across the northwest have increased by almost 1.3°F, in addition to general increases in precipitation (National Climate Assessment 2014).

Table 4.4-3 provides an evaluation of potential climate stressors due to the proposed projects. The operational activities at Fairchild AFB in and of themselves are only indirectly dependent on any of the elements associated with future climate scenarios (e.g., meteorological changes). At this time, no future climate scenario or potential climate stressor would have appreciable impacts due to any element of the Proposed Action.

Table 4.4-3: Impacts of Potential Climate Stressors on the Proposed Action

Potential Climate Stressor	Impacts on the Proposed Projects
Changing stream flow and snow melt	Negligible
Longer fire seasons and more severe wildfires	Negligible
Changed in precipitation patterns	Negligible
Increases in temperature	Negligible
Harm to water resources, agriculture, wildlife, ecosystems	Negligible

Source: National Climate Assessment 2014.

Because projected air emissions would be well below *de minimis* levels; there would be no violation of the NAAQS or any federal, state, or local air quality regulations; and potential climate stressors would have negligible effects on the proposed projects, no significant impacts to air quality would occur.

4.4.2 No Action Alternative

The No Action Alternative would result in no new impacts on air quality because the proposed projects would not occur and no facility construction, demolition, or renovation would be undertaken. Air quality conditions would remain unchanged when compared to existing conditions at the installation.

4.5 WATER RESOURCES

The evaluation of impacts to water resources considers water availability, water quality, loss of a particular resource and/or its functions, and adherence to applicable regulations. Impacts are measured by the projects' potential to reduce water availability or supply to existing users, endanger public health or safety by causing decreased surface water or groundwater quality, or violate laws or regulations adopted to protect or manage water resources. Impacts are also measured by evaluating whether there would be a temporary or permanent loss of water resources, or a loss or reduction in their ability to perform their unique functions. The impacts analysis also considers the potential indirect impacts to wetlands associated with loss or degradation of associated buffers needed to protect their functions and values.

Impacts to water resources would be significant if any of the following were to occur:

- Reduction in water availability or supply to existing users.
- Degradation of water quality or endangerment of public health by contributing pollutants to surface water or groundwater.

- Alteration of unique hydrologic characteristics.
- Permanent (unmitigated) loss of wetlands.
- Adverse effects to high-value wetlands or degradation of buffers around high-value wetlands
- Violation of established laws or regulations that have been adopted to protect or manage water resources of the area.

4.5.1 Proposed Action/Alternatives

Groundwater

During demolition and construction activities associated with the proposed projects, accidental spills or leaks of substances such as fuels, oils, and other lubricants could result in contamination of groundwater and the shallow aquifers beneath Fairchild AFB. Risks for such spills would be reduced by standard procedures of maintaining all equipment according to manufacturer's specifications, and appropriately containing and storing all fuels and other potentially hazardous materials. Additionally, use of secondary containment for temporary storage of any hazardous materials and other project-specific BMPs would minimize the risk for spills or leaks.

The increase in impervious surface associated with the proposed projects (approximately 13.6 acres over various locations; see Section 4.10.1) would cause a localized reduction in water infiltration to soil and bedrock in the project areas. However, given the nature of the stormwater system at Fairchild AFB, it is expected that runoff from these new impervious areas would infiltrate within the installation (runoff from projects in Basins 5 and 8) or at discharge points outside the installation boundary (runoff from projects in Basins 1, 6, and 7), and that there would be no overall reduction in groundwater recharge as a result of the proposed projects. Because the projects are not associated with an increase in on-base population or water usage, they would have no effect on the rate of depletion of regional aquifers.

Project MD01 (Demolish USTs and OWSs) could result in a minor reduction in the risk of groundwater contamination by removing multiple unused tanks and remediating associated contaminated soils, if present.

Project OM02 (Construct Potable Water Intertie to City of Spokane Water System) could have a minor beneficial impact on the West Plains aquifer by providing a second connection to the City of Spokane's potable water system, which would reduce the likelihood that Fairchild AFB would need to obtain water from the on-site well that taps into this aquifer.

Because there would be measures in place to minimize risks for groundwater contamination from construction sites, and no regional reduction in groundwater infiltration, no significant impacts to groundwater resources would occur.

Surface Water

As discussed in Section 3.5.2, Fairchild AFB has no natural stream courses, but does convey surface water in ditches and other stormwater features. The locations of these features in relation to the proposed projects are shown in Figure 4.5-1 and Figure 4.5-2. Seven of the 13 proposed projects occur within 100 feet of surface water features. Project MD02 (MSA and Pad 5 Drop Zone Electrical Underground) crosses a mapped surface water feature. However, this feature is a remnant human-made ditch that was used for irrigation when the land was in agricultural production. While water can be found in this ditch early in the spring, it is not part of the installation's stormwater system, and does not drain to other surface waters. Given the vicinity of several proposed projects to stormwater drainage features, demolition and construction activities that disturb soil during implementation of these projects could result in sedimentation into local surface water conveyances. This could have a localized, short-term impact on water quality on Fairchild AFB or a short distance beyond the installation boundary. To reduce

the risk of sedimentation, all ground-disturbing activities would be conducted in accordance with the applicable stormwater discharge permit to control erosion and prevent sediment, debris, or other pollutants from entering the stormwater system. Additionally, a SWPPP would be implemented and followed during construction to minimize the potential for adverse effects associated with erosion and sedimentation. Protection measures would likely include the use of silt fences and covering of soil stockpiles and other project-specific measures. Fairchild AFB would be required to obtain coverage under the NPDES General Permit for all construction activities over 1 acre to minimize impacts from sedimentation on water quality. During construction of Project MD02, crossing of the old agricultural ditch would not be done during the wet season or when there is water in the ditch. Due to these BMPs for erosion and sediment control, any local turbidity in site surface waters would not be expected to reach natural stream channels off the installation.

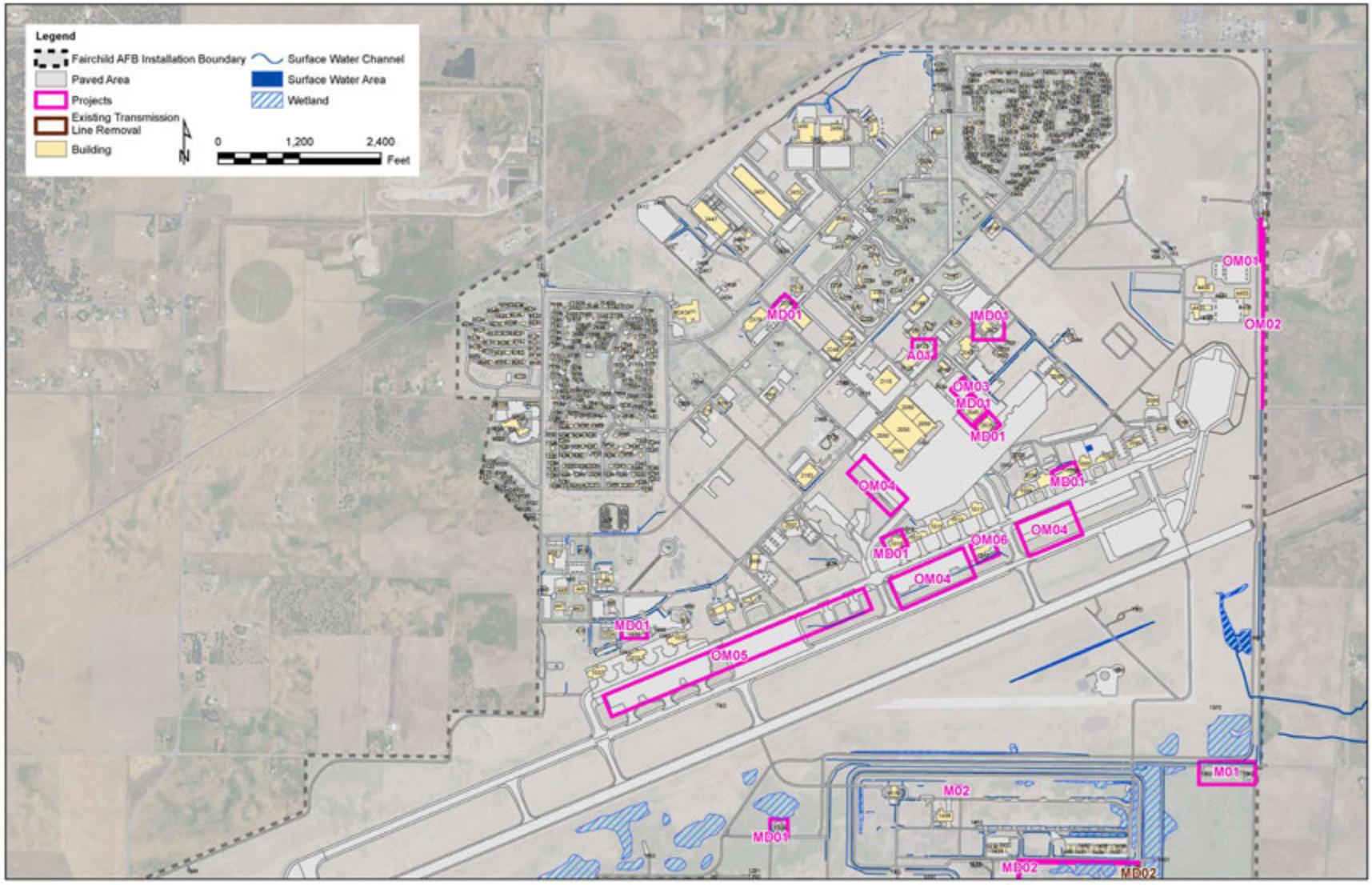

Figure 4.5-1: Mapped Surface Water Features and Wetlands in Relation to Proposed Project Locations (North)

Environmental Consequences

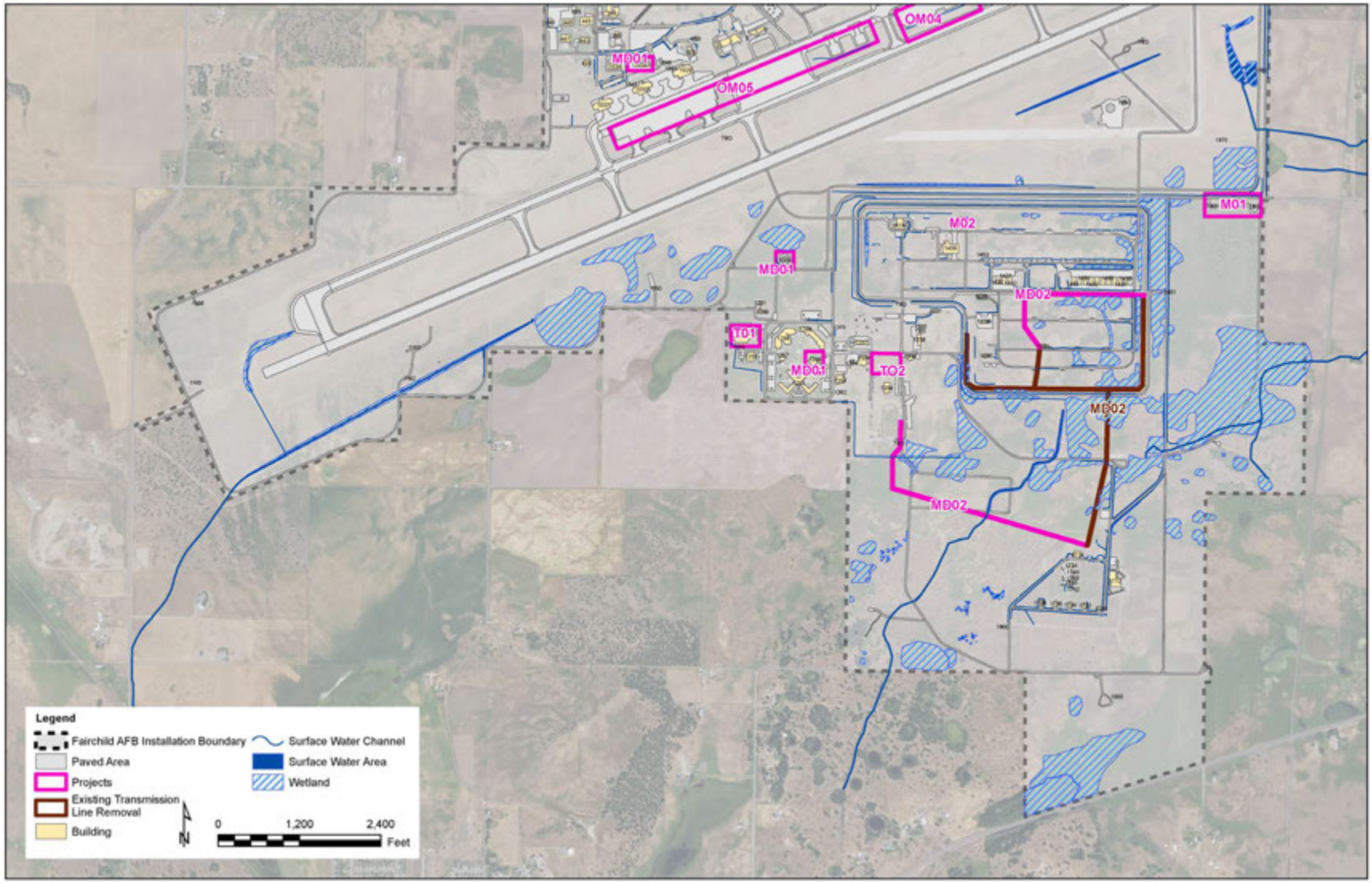

Figure 4.5-2: Mapped Surface Water Features and Wetlands in Relation to Proposed Project Locations (South)

Environmental Consequences

The increase in impervious surface by approximately 13.6 acres would decrease infiltration that provides base flow support to on-site surface water conveyances, and would increase the potential for rapid surface runoff from the project areas following construction, particularly during and after heavy rainfall. Project design for new impervious developments would include stormwater features, as needed, to incorporate runoff from the new areas into the installation's stormwater system. In accordance with the requirements of Section 438 of the EISA, Fairchild AFB would be required to incorporate design elements that maintain or restore predevelopment site hydrology to the maximum extent practical, with regard to rate, volume and duration of discharge from the site (USEPA 2009). Stormwater controls and BMPs implemented consistent with a SWPPP and a CWA Section 401 Water Quality Certification would avoid the potential for adverse impacts on surface waters. Based on the installation's distance from free-flowing surface waters, it is unlikely that stormwater discharges from Fairchild AFB would reach any impaired water bodies.

Because there would be measures in place to minimize the risk of sedimentation into surface waters and runoff from the new construction sites would be routed into existing stormwater systems, no significant impacts to surface water resources would occur.

Wetlands

Based on Fairchild AFB's current GIS mapping of wetlands on the installation (Figure 4.5-1 and Figure 4.5-2), the proposed projects would not occur in wetlands, and most would occur outside of wetland buffers. Projects have been planned to avoid wetlands. For project MD02 (MSA and Pad 5 Drop Zone Electrical Underground), the current overhead transmission lines occur in an area with high wetland coverage and cross mapped wetlands. In order to avoid wetland impacts when undergrounding the lines, the project has been designed to reroute the transmission lines so that they no longer cross wetlands. Demolition of the existing overhead transmission lines would have the potential to disturb wetlands during removal of poles, resulting in minor temporary impacts. In order to minimize these impacts, Fairchild AFB would implement the following construction BMPs:

- Where vehicles and equipment must enter wetlands to access poles and ground conditions are such that damage to soil or vegetation could occur, use temporary construction mats for vehicle and equipment access.
- Time work in wetlands during the period when the water table is lowest to minimize the potential for impacts.
- Remove poles located in wetlands when the ground is dry to minimize disturbance. If poles are located in wetlands that do not seasonally dry up, cut them as close to the ground as possible, or leave as wildlife/perch poles if they are far enough away from the flightline that they would not be a flight hazard.
- Restore the former pole sites and other disturbance areas to match the surrounding topography and vegetation.

Over the long term, removal of poles from wetlands would have a long-term minor impact by permanently removing fill.

Other proposed projects occur in the vicinity of mapped wetlands. Based on GIS mapping, Project M01 (Add/Alter Thorpe and Rambo Road Gate) and one location of Project MD01 (Demolish USTs and OWSs) would occur adjacent to mapped wetlands. For Project M01, the mapped wetland is separated from proposed work areas by an unpaved road and a vegetated strip of land, and could be avoided during project activities. For Project MD01, the UST that would be removed is located beneath a paved area at the airfield tower, and wetlands could be avoided during digging and removal activities. Other proposed projects may be located near wetlands that are not currently mapped.

Environmental Consequences

Wetland delineations for a review of proposed projects would occur prior to final design of the project in order to allow for additional refinement of the design and impact avoidance based on a detailed mapping of wetlands. Wetlands would be avoided, and buffers would be avoided to the degree possible, although it is expected that temporary impacts associated with trenching in wetland buffers could occur. Based on guidance from Washington Department of Ecology (2014), buffer widths would be approximately 50 feet for Category IV wetlands, 150 feet for Category III wetlands, and larger for Category I and II wetlands. Based on current mapping and ratings, none of the proposed projects would affect buffers of Category I and II wetlands. Should trenching occur in wetland buffer areas, the disturbed area would be restored at project completion by reseeding with an appropriate native seed mix. No permanent impacts to wetland buffers are expected.

Provided Fairchild AFB takes the appropriate steps, listed below, to review wetlands, and follows all regulatory requirements pertaining to wetlands, significant impacts to wetlands are not anticipated:

- Conduct a wetland review at project locations within 150 feet of a delineated wetland.
- In areas where a wetland review indicates the possible presence of a wetland, confirm the wetland delineation and appropriate buffer.
- Revise project design, location, or other components as needed to avoid wetland impacts.
- If a thorough analysis of alternatives reveals that there is no practicable alternative to impacting wetlands, coordinate with regulatory and resource agencies to obtain permits and develop appropriate strategies to avoid, minimize, or otherwise mitigate for those impacts, as necessary.

Fairchild AFB's institutional management requirements include practices to minimize impacts to wetlands. Environmental protection measures, design standards, and siting practices are standard procedures to reduce potential impacts to wetlands. They include the following:

- Flagging the boundary of wetlands to avoid unnecessary construction equipment and personnel from entering the wetland area.
- Phasing construction activities so that smaller areas of land are disturbed at the same time to limit soil exposure.
- Installing sedimentation basins and detention or retention ponds to contain sediment and runoff in the construction area.
- Following procedures to contain and clean up spills of fuels and other potentially hazardous materials quickly.
- Developing and implementing an Erosion and Sediment Control Plan.
- Developing a construction-grading plan in order to divert stormwater runoff away from nearby wetlands.
- Using docks or boardwalks across wetland areas, rather than filling in the wetland area to create a pathway.
- Minimizing the use of heavy machinery in wetlands.
- Restricting construction activities to drier periods of the year.
- Disposing of construction debris in a non-wetland area.

Based on currently available information, it is expected that all of the proposed projects would avoid wetlands, with pole removals for Project MD02 potentially resulting in temporary minor impacts to wetlands and long-term beneficial effects. Proper implementation of the measures listed in this section would ensure that unforeseen unavoidable impacts to wetlands and wetland buffers would be identified and mitigated, and that the Air Force would be in compliance with all applicable laws and regulations. No

permanent loss of wetlands would occur, and there would be no adverse effects to high-value wetlands. Therefore, no significant impacts to wetlands would occur.

4.5.2 No Action Alternative

Under the No Action Alternative, no facility construction, demolition, or renovation would occur, and there would be no associated interaction with groundwater, surface water, or wetlands. There would be no reclamation of contaminated soil in localized areas under this alternative, and no second water intertie with the City of Spokane to reduce to likelihood that on-site wells would need to be accessed for emergency water generation. However, no new impacts to water resources would occur.

4.6 SAFETY AND OCCUPATIONAL HEALTH

Any increase in safety risks would be considered an adverse impact on safety. Impacts associated with health and safety would be considered significant if the proposed projects were to:

- Substantially increase risks associated with the safety of construction personnel, contractors, USAF personnel, or the local community.
- Hinder the ability to respond to an emergency.
- Introduce a new health or safety risk for which the USAF is not prepared or does not have adequate management and response plans in place.

4.6.1 Proposed Action/Alternatives

Construction Safety

Short-term, minor, adverse impacts on contractor health and safety could occur from implementation of the proposed projects. The short-term risk associated with work performed by demolition and construction contractors would slightly increase at Fairchild AFB during the normal workday, as construction and demolition activity levels would increase. However, all contractors would be required to follow and implement AFOSH safety standards to establish and maintain safety procedures. The proposed projects would not pose new or unacceptable safety risks to installation personnel or activities at the installation, but would enable Fairchild AFB to meet future mission objectives at the installation and conduct or meet mission requirements in a safe operating environment. No long-term impacts on safety would be expected.

Construction workers could encounter soil or groundwater contamination as a result of an ERP site or previously unknown soil or groundwater contamination. Section 3.6.2 describes recommendations regarding workers and health and safety procedures. All structures that would be demolished under the Proposed Action that were built before 1978 would be expected to contain ACM, LBP, and PCB-contaminated materials. These materials require appropriate characterization, removal, handling, and disposal during demolition activities by qualified personnel; however, adherence to all federal, state, local regulations, and Fairchild AFB management plans, would result in negligible impacts on safety during implementation of the proposed projects. Long-term, beneficial impacts on safety would be expected from the removal of ACM, LBP, and PCB-contaminated materials, which would reduce exposure to personnel. All proposed construction and demolition activities would be conducted in accordance with federal, state, and local regulations to minimize safety hazards associated with hazardous materials, wastes, and substances.

Explosives and Munitions Safety

Short-term, minor, adverse impacts could occur during construction and demolition activities that would take place within existing QD arcs. Construction activities associated with Project MD02 would occur

within the MSA QD in the southern portion of the installation. Contractors working within a QD arc could be exposed to an increased risk of potential explosions. To avoid potential impacts on construction workers and the installation mission, Project MD02 should be coordinated with the installation Safety Office to ensure that no handling or transportation of materials would occur within QD arcs while construction workers are within these areas. This precaution would minimize explosive safety risks to construction workers. Prior to trenching work, the MSA should be surveyed for potential UXO. All of the project areas that are within established QD arcs would be mission-necessary and consistent with current land uses. A waiver would be obtained from HQ AMC for any projects located within QD arcs prior to commencement of the project activities.

Mission Safety

Several of the proposed projects would improve mission safety on Fairchild AFB. Project OM01 (Connect Rambo Gate Search Facility to Water Distribution Branch Line) would improve fire-related safety, as it would eliminate existing periodic reductions in pressure that could impact the performance of the fire suppression system. Project OM06 (Demolish Building 1012) would improve flight safety by removing an existing airfield obstruction. Project M01 (Add/Alter Thorpe and Rambo Road Gate) would improve traffic safety by reducing congestion. Project M02 (Construct Entomology Facility) would improve safety of personnel who handle pesticides or work in the building by allowing for safe mixing and storage of pesticides. Project MD02 would reduce risks associated with damage to overhead transmission lines, associated power outages, and worker maintenance on downed lines. Together, these projects would have a moderate beneficial impact on mission safety.

Because there would be measures in place to protect worker safety during construction, and because none of the proposed projects would hinder the ability to respond to an emergency or introduce a new health or safety risk to Fairchild AFB, no significant impacts to safety or occupational health would occur.

4.6.2 No Action Alternative

Under the No Action Alternative, the proposed construction projects would not occur and there would be no associated impact to human health or safety. No facility construction, demolition, or renovation would occur, and there would be no changes in aircraft operations. However, without implementation of Projects OM06, M01, M02, and MD02, the beneficial impacts to human health and safety discussed in the preceding paragraph would not occur.

4.7 HAZARDOUS MATERIALS/WASTE

The evaluation of impacts associated with hazardous materials and waste focuses on how and to what degree the proposed projects and alternatives would affect hazardous materials usage and hazardous/solid waste generation and management, as well as how they would impact ERP sites.

A significant impact would occur if:

- Implementation of the proposed projects resulted in the use of hazardous materials that are highly toxic or have a potential to cause severe environmental damage (e.g., extremely hazardous substances as listed in the Superfund Amendments and Reauthorization Act Title III).
- Proposed activities generated hazardous/solid waste types or quantities that could not be accommodated by the current management system.
- A disturbance to an ERP site would result in a potential release of hazardous constituents, exacerbating the migration of existing hazardous constituents or would pose an elevated safety risk to workers due to exposure to these constituents.

- Disturbance of or interference with remedial activities at an ERP site, or violation of the LUCs designed to protect and ensure the effectiveness of the selected remedy at an ERP site were to occur.

4.7.1 Proposed Action/Alternatives

Hazardous Materials and Petroleum Products

Short-term, minor, adverse impacts associated with the use of hazardous materials and petroleum products would be expected. During facility demolition and renovation activities, any hazardous materials or petroleum products present would be excessed or transferred to the new facilities prior to commencement of project activities. Construction, demolition, and renovation activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, sealants, and fuel. It is anticipated that the quantity of hazardous materials used would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials and petroleum products, which would be handled in accordance with federal, state, and USAF regulations. In accordance with AFI 32-7086, contractors would report use of hazardous materials to the Environmental Office via the contracting officer, including pertinent information (e.g., Safety Data Sheets) in an effort to mitigate any potential impacts associated with hazardous materials. Contractors would use environmental protection measures to prevent hazardous materials releases and ensure that any releases do not result in contamination.

Long-term, beneficial impacts associated with hazardous materials and petroleum products could occur as a result of demolition of aged facilities and construction of new facilities that would have modern hazardous material and petroleum product storage areas. Hazardous materials and petroleum products stored and used during operation and maintenance of the new facilities would be similar in type and quantity to existing conditions. Proposed project OM05 (Construct New Hydrant Refueling System) would construct a new facility for storage of petroleum products. The new system would be constructed to meet all applicable design standards to minimize the risks of releases of petroleum products.

Hazardous and Petroleum Wastes

Short-term, minor, adverse impacts associated with the generation of hazardous and petroleum wastes would be expected. During facility demolition and renovation activities, any hazardous and petroleum wastes currently being stored at the facilities would be disposed of off-site or transferred to new facilities prior to commencement of project activities. The quantity of hazardous and petroleum wastes generated from construction and demolition activities would be minimal and would not be expected to exceed the capacities of existing hazardous waste and petroleum waste facilities. Contractors would be responsible for the disposal of hazardous and petroleum wastes in accordance with federal, state, and local regulations. Contractors would also be required to comply with the installation's Hazardous Waste Management Plan.

Long-term, beneficial impacts associated with hazardous and petroleum wastes could occur as a result of demolition of aged facilities and construction of new facilities that would have modern hazardous waste and petroleum waste storage areas. Hazardous and petroleum wastes generated and stored during operation and maintenance of the new facilities and infrastructure would be similar in type and quantity to existing conditions.

Storage Tanks

Long-term, beneficial impacts on ASTs and USTs within the project areas would be expected. For projects involving demolition, the storage tanks present within the project area would be replaced with ASTs/ USTs and piping systems compliant with federal regulations. For projects involving construction, the existing ASTs would be emptied of their contents and either moved to the new facilities or replaced

with new storage tanks. Project MD01 (Demolish USTs and OWSs; see Table 2.3-1) would have a beneficial impact by removing unused tanks and remediating any associated contaminated soils. When USTs are removed, a Closure Report must be submitted to Washington Department of Ecology in accordance with Chapter 173-360 of the WAC. As a BMP, FAFB also conducts a Closure Report on unregulated USTs. As part of the Closure Report, one floor and two side-wall samples must be taken. The samples must be below MTCA cleanup thresholds. If samples are above cleanup levels, remediation will be conducted.

Asbestos-Containing Material

Short-term, minor, adverse impacts associated with ACM could be expected. Buildings proposed for demolition (Buildings 1012 and 2415) may contain ACM, and would need to be surveyed for asbestos by a certified inspector prior to commencement of demolition activities. Project plans would be reviewed by Fairchild AFB Civil Engineering personnel to ensure appropriate measures are taken to reduce potential exposure to, and release of, asbestos. For activities involving the removal of more than 48 square feet or 10 feet of ACM, notification must be provided to the Washington State Department of Labor and Industries at least 10 working days prior to the commencement of the project (WAC 296-65-020). All ACM discovered would be removed prior to demolition and disposed of at a USEPA-approved landfill. Contractors would be required to adhere to all federal, state, and local regulations in addition to the Fairchild AFB management plans. USAF regulations restrict the use of ACM for new construction. Long-term, negligible, adverse impacts would be expected due to the additional disposal of ACM in USEPA-approved landfills. However, long-term, beneficial impacts would be expected from less exposure to and maintenance of ACM due to demolition of aged buildings.

Lead-Based Paint

Short-term, minor, adverse impacts associated with LBP could be expected. Buildings proposed for demolition include Building 1012 and Building 2415. Based on a hazardous building material survey done in 2003, Building 1012 contains LBP (Hart Crowser 2003). As stated in the survey report, during demolition it would be necessary to conduct a negative exposure assessment, implement engineering controls, and provide protective equipment to minimize worker exposures to lead-containing dust. Based on the sampled lead concentration, demolition debris would not require disposal as a lead-containing dangerous waste (Hart Crowser 2003). Building 2415 was constructed in 1996 and therefore is unlikely to contain LBP. Facilities containing LBP can be demolished without removing the LBP; however, all LBP-contaminated construction debris would be disposed of at a USEPA-approved landfill. Contractors would be required to adhere to all federal, state, and local regulations, in addition to Fairchild AFB management plans. Long-term, negligible, adverse impacts would be expected due to the additional disposal of LBP in USEPA-approved landfills. However, long-term, beneficial impacts would be expected from less exposure to and maintenance of LBP due to demolition of aged buildings.

Polychlorinated Biphenyls

Short-term, minor, adverse impacts associated with PCBs could be expected. Buildings proposed for demolition may contain PCBs, although Building 2415 was constructed in 1996 and should not contain PCBs. Any potential PCB-containing equipment not labeled PCB-free or missing date-of-manufacture labels discovered within the facilities proposed for demolition would be removed and handled in accordance with federal and state regulations and the installation's Hazardous Waste Management Plan. PCB-containing materials would be transported off-installation and disposed of at a hazardous waste disposal facility. Long-term, beneficial impacts would be expected from the removal of PCB-containing equipment due to demolition of aged buildings.

Pesticides

Long-term beneficial impacts associated with pesticides would be expected as a result of Project M02 (Construct Entomology Facility). The new facility would allow for safe storage of all pesticides, with closed sump systems to contain pesticide spills and prevent releases to the environment. The proposed projects would not require significant long-term change in the quantities of pesticides used or significantly alter pesticide application areas. Future pesticide applications at the proposed project areas would be conducted according to federal, state, and local regulations and the installation's Integrated Pest Management Plan (Fairchild AFB 2018d).

Radon

Short-term, negligible, adverse impacts from radon could occur due to implementation of the proposed projects. Construction workers could be exposed to radon during subsurface construction activities; however, they would generally be in open air, which would greatly reduce their exposure. Long-term, negligible, adverse impacts from radon would be expected due to the proposed projects. Based on the high potential for elevated indoor radon levels in Spokane County, some of the new structures might require radon mitigation systems. Radon testing at the selected project areas could be used to determine the presence of radon and the need for a radon mitigation system.

Environmental Restoration Program

Several of the proposed project areas overlap or are located near existing ERP sites at Fairchild AFB, as shown in Figure 3.7-1 and Figure . Based on a review of the proposed projects and information pertaining to the ERP sites at these project locations (see Table 3.7-1), none of the proposed projects would disturb or interfere with cleanup actions at CERCLA sites, or result in a need to revise the selected remedies at these sites. All projects would be designed and constructed to avoid impacts to monitoring wells associated with CERCLA sites.

While several proposed project locations overlap soil control and water use LUCs, these LUCs pertain to fuel contamination sites that are being cleaned up under the VCP rather than CERCLA. In these areas there would be the potential for inadvertent discovery of soil and groundwater contamination during construction and demolition activities. If fuel-contaminated soil or groundwater from nearby ERP sites were to be encountered during project activities, the contractor would be required to immediately stop work, report the discovery to the installation, and implement appropriate safety measures. Commencement of field activities would not continue in this area until the issue is investigated and resolved. The handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable federal, state, and local regulations; USAF regulations; and Fairchild AFB management procedures.

Specific information pertaining to projects that overlap mapped ERP sites is provided below. Impacts from project activities would be short term and minor.

- Project A01 (Upgrade Intelligence Facility) overlaps ERP site SS039 (TCE orphan plumes). The groundwater plume in this area is at a depth below which it would be encountered during project activities.
- Project OM03 (Construct Covered Refueler Parking) overlaps ERP site SS039 and areas of potential fuel contamination. Soil disturbance in this area would be minimal, and would not occur a at a depth where the TCE groundwater plumes would be encountered. If fuel-contaminated soil or groundwater are encountered, the steps described previously would be followed to prevent impacts.

- Project OM04 (Construct Pull-through Airfield Parking Spots) overlaps ERP site SS039 and areas of potential fuel contamination. The TCE groundwater plume in this area is at a depth below which it would be encountered during project activities. If fuel-contaminated soil or groundwater are encountered, the steps described previously would be followed to prevent impacts.
- Project OM05 (Construct New Hydrant Refueling System) overlaps ERP site SS039 and areas of potential fuel contamination (including ERP site SS-018). The TCE groundwater plume in this area is at a depth below which it would be encountered during project activities. If fuel-contaminated soil or groundwater are encountered during construction, the steps described previously would be followed to prevent impacts.
- Project OM06 (Demolish Building 1012) overlaps ERP site SD034 (waste fuel operations) and a 2004 fuel spill area. If fuel-contaminated soil or groundwater are encountered during demolition, the steps described earlier would be followed to prevent impacts.
- Project T02 (Construct Water Survival Training Facility) is located approximately 280 feet from ERP site TU503 (survival school gas station) and overlaps the associated LUC area; and it would have the potential to encounter petroleum-related contamination during construction. If fuel-contaminated soil or groundwater are encountered, the steps described previously would be followed to prevent impacts.
- Project M01 (Add/Alter Thorpe and Rambo Road Gate) is located more than 500 feet from ERP site FT004 (fire training area). Therefore, there would be no impacts to this ERP site, and it is not expected that contaminated soil or water would be encountered during construction.
- Project MD01 (Demolish USTs and OWSs) overlaps ERP site SS039 (TCE orphan plumes), and would occur at various locations with fuel contamination. The TCE groundwater plume in this area is at a depth below which it would be encountered during tank removal activities. If fuel-contaminated soil or groundwater are encountered during tank removal, the steps described previously would be followed to prevent impacts.
- Project MD02 (MSA and Pad 5 Drop Zone Electrical Underground) is adjacent to ERP site WP036 (Holding Lagoon and Imhoff Tank). The site is completely fenced and marked to prohibit access, and work would occur outside the fence, so no trenching would occur within this ERP site.

Because contractors would follow established plans and procedures to prevent exposures to hazardous materials and to dispose of solid and hazardous wastes appropriately and in compliance with all pertinent regulations, monitoring wells associated with CERCLA sites would be protected, and the proposed projects could result in the removal of some hazardous materials from Fairchild AFB, no significant impacts associated with solid or hazardous materials or waste would occur.

4.7.2 No Action Alternative

Under the No Action Alternative, none of the proposed projects would be implemented. Baseline conditions for hazardous materials, hazardous wastes, asbestos and LBP, ERP sites, and solid wastes, as described in Section 3.7, Hazardous Materials and Waste, would remain unchanged. Therefore, no significant impacts would occur under the No Action Alternative.

4.8 BIOLOGICAL RESOURCES

This section discusses impacts to biological resources from various aspects of the proposed projects, including direct physical impacts, habitat alteration/loss, and short-term disturbance during construction or demolition activities. The analysis considers potential impacts to vegetation communities and wildlife, including sensitive species, based on habitat types affected and previously documented occurrence on Fairchild AFB. Impacts on biological resources would be considered significant if they result in an appreciable reduction in species population abundance, fitness, or distribution within the region; or in a

disproportionate reduction in habitat quality or quantity; or result in the permanent loss of irreplaceable high-quality plant communities or wildlife habitat.

4.8.1 Proposed Action/Alternatives

Vegetation

The proposed projects would result in short- and long-term minor adverse impacts to vegetation. Short-term impacts would be associated with trampling, use of heavy equipment, and vegetation removal in unpaved areas that could be restored following the project activities. These projects would include utility projects OM01, OM02, and MD02. In the areas of projects OM01 (Connect Rambo Gate Search Facility to Water Distribution Branch Line) and OM02 (Construct Potable Water Intertie to City of Spokane Water System), restoration of disturbed roadside vegetation could be achieved though reseeding.

Project MD02 (MSA and Pad 5 Drop Zone Electrical Underground) would trench through less disturbed areas in the southern portion of the installation, but would avoid mapped wetlands and the area in the southwestern portion of the installation mapped as a Spalding's catchfly area (Figure 4.8-1). Disturbed areas should recover to current conditions following the trenching disturbance and impacts would be minor.

Long-term impacts would include the permanent removal of vegetation through conversion of currently undeveloped areas into developed sites. Long-term impacts would be associated with construction and paving for projects A01, OM04, OM05, T01, T02, M01, and M02. The total area over which vegetation would be permanently lost (based on estimated new impervious surface) would be approximately 15.2 acres (less than 1 percent of the total land area on the installation). Based on available information about the vegetation in these areas, only common species would be removed. Additionally, many sites are located in developed areas and most have been disturbed previously. Therefore, it is expected that impacts would be minor. Project OM06 (Demolish Building 1012) would result in restoration of vegetation over a small area (1.6 acres), which would be a negligible beneficial impact.

Project OM03 (Construct Covered Refueler Parking) would not have any impacts outside of paved areas, and therefore would not impact vegetation. Project MD01 (Demolish USTs and OWSs) would occur primarily in paved areas, but could also temporarily affect small areas of landscaping. However, this project would not impact native vegetation.

Ground disturbance and use of construction vehicles and other equipment can lead to the spread of noxious weeds and other invasive species in and around construction sites. As discussed in Section 3.8.2, several noxious weed species are already present on Fairchild AFB. Therefore, the proposed projects would have the potential to adversely affect native vegetation communities by increasing the presence/cover of invasive species. The potential for impacts would be greatest in the areas affected by Project MD02, which traverses undeveloped areas in the south portion of the base, which has been identified as the area most at risk for noxious weed infestations (Fairchild AFB 2018b). The potential for spread of noxious weeds by construction equipment would be reduced by following appropriate BMP including cleaning and removing all noxious weed material and seeds from equipment prior to its use on-site and prior to transporting the equipment off-site. Following construction, disturbed areas would be revegetated with weed free materials to prevent colonization by noxious weeds.

Because it is not expected that the proposed projects would result in the irreplaceable loss in high-quality plant communities, or result in an appreciable reduction in population abundance, fitness, or distribution in the region. no significant impacts to vegetation would occur under the Proposed Actions or alternatives.

Wildlife

The proposed projects would result in direct and indirect adverse impacts on wildlife on and in the vicinity of construction work areas.

Within work areas, use of vehicles and construction equipment could result in injury or direct mortality of wildlife. Mobile species such as adult birds could flee the area and would be less susceptible to direct impacts than smaller, less-mobile species or life stages. Given the location and extent of the projects, the number of individuals affected would likely be small in the context of local and regional populations, and it is not expected that there would be population-level effects to any common species. Potential impacts to sensitive species are discussed in more detail in the following subsection.

Long-term impacts to wildlife habitat would occur in areas where new buildings and pavement would be constructed in unpaved areas currently used by wildlife. These impacts could occur as a result of projects A01, OM04, OM05, T01, T02, M01, and M02. The total area over which wildlife habitat could be permanently lost would be approximately 15.2 acres (less than 1 percent of the total land area on the installation). However, it is not expected that these areas currently provide high-quality wildlife habitat, especially when considered in the context of other available habitat in the region. While Project M01 (Add/Alter Thorpe and Rambo Road Gate) would occur within a mapped wildlife management area (Figure 4.8-1), new pavement associated with this project (approximately 30,000 square feet) would be located at the edge of the mapped polygon, between two existing roads in an area that does not currently provide high-quality wildlife habitat.

Project OM03 (Construct Covered Refueler Parking) would not have any impacts outside of paved areas, and therefore would not impact wildlife habitat. Project MD01 (Demolish USTs and OWSs) would occur primarily in paved areas, but could also temporarily affect small areas of landscaping with a low likelihood of providing wildlife habitat. Project OM06 (Demolish Building 1012) would replace pavement with low growing herbaceous vegetation that could provide wildlife habitat, which would be a negligible beneficial impact.

At all project locations, noise associated with construction, demolition, and/or use of heavy equipment could disturb wildlife, including migratory birds. Projects would generally occur in developed areas, where wildlife are likely to be adapted to urban noises and human presence to some degree. During the loudest work periods, more mobile wildlife would likely avoid the project areas until construction is completed. Potential impacts would be greatest for proposed projects in the southern portion of Fairchild AFB, where open space is more prevalent and there are likely to be higher densities and diversity of wildlife. While some individuals might avoid the project sites over the long term, the affected areas would be small when compared with other, similar habitat nearby. Therefore, impacts would be minor.

Project M01 would introduce additional disturbance to the north edge of the mapped wildlife management area. Construction activities would occur at an existing gate, where vehicle noise and human activities are already prevalent, and short-term noise disturbance impacts to wildlife would be minor. However, as a result of this project the Thorpe and Rambo Road Gate would be open longer hours than at present, and there would likely be more vehicle traffic in the area, which could have minor long-term effects on wildlife from increased noise disturbance and increased risk of vehicle strikes.

Because it is not expected that the proposed projects would result in an overall decrease in species population abundance, fitness, or distribution within the region; result in a disproportionate reduction in habitat quantity or quality; or result in a permanent loss of irreplaceable high-quality wildlife habitat, no significant impacts to wildlife would occur.

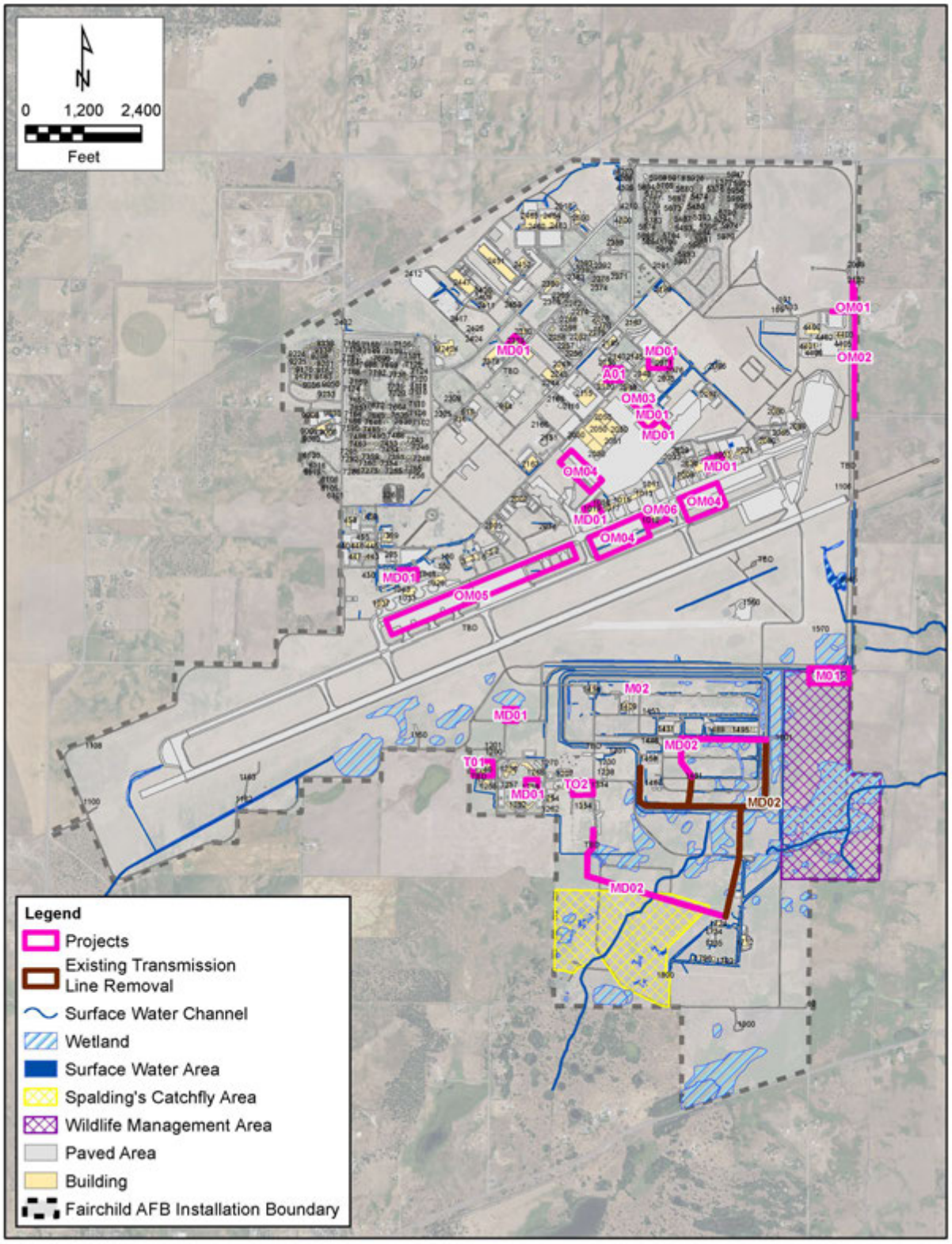

Figure 4.8-1: Mapped Biological Resource Areas on Fairchild AFB in Relation to Proposed Project Locations

Protected and Sensitive Species

The proposed projects would not affect most of the listed and rare species that may occur on or near Fairchild AFB, as these species are unlikely to be present in or near proposed project construction areas (see Section 3.8.2). Developed portions of the installation are not expected to provide suitable habitat for federal- or state-listed threatened or endangered species. Most of the projects associated with the Proposed Actions are within previously developed portions of the base. The only selected project that occurs near a largely undisturbed grassland or wetland area is MD-02.

Protected or sensitive species that are present near work areas at the time of construction could be temporarily disturbed by construction noise and worker presence. For species that are passing through the area, these impacts would be minor, as individuals could readily leave work sites to avoid the disturbance.

Impacts would be greater for individuals breeding or nesting near work sites. As discussed previously, breeding and nesting wildlife are unlikely to be present in the project areas. Of the wildlife species that have previously been observed on Fairchild AFB, suitable breeding or nesting habitat for Columbia spotted frog may be present in the vicinity of proposed construction habitats for MD-02.

Columbia spotted frogs are widespread on Fairchild AFB, and may be present in ponds, ditches, and wetlands in the vicinity of some of the proposed demolition and construction areas (see Section 4.5.1). Measures to prevent sedimentation into surface water resources, which are discussed in Section 4.5.1, would reduce the risk of habitat degradation for this and other amphibian species. Avoidance of wetlands (see Section 4.5.1) would minimize the risk of injury or mortality to individuals or egg cases, if present.

The two ESA-listed species—water howellia and Spalding's catchfly—are unlikely to be affected by the proposed projects. Water howellia is not known to occur on Fairchild AFB and the proposed projects would not occur in suitable habitat for the species. The area mapped as supporting Spalding's catchfly is located approximately 200 feet project MD02 at its closest location (Figure 4.8-1). Populations of Spalding's catchfly on Fairchild AFB are monitored annually and marked to avoid disturbance. Based on known locations of the species, the proposed electrical underground route would not impact mapped populations, and stakes/flagging would alert workers about which areas to avoid during construction to prevent inadvertent impacts to populations from crushing by equipment or feet.

Based on GIS data from the Washington Natural Heritage Program (2019), the proposed electrical underground route would be located at the edge of or near approximate recorded locations of northwestern yellowflax, foxtail, mousetail, and two high-quality native plant communities. Should sensitive species or native vegetation communities be present along the proposed underground utility line route, trenching work could result in mortality or disturbance of individual plants.

Given the prevalence of invasive plant species on Fairchild AFB, ground disturbance and use of mobile equipment during construction could lead to the spread of noxious weeds and other invasive species into higher quality habitats and increased competition with native plant species. In particular, construction work associated with project MD02 would have the potential to introduce seeds and other propagules from more disturbed habitats into less disturbed habitats as trenching and other equipment moves along the proposed route. In order to reduce the potential for impacts to sensitive plant species from the spread of noxious weeds and other invasive plant species, Fairchild AFB would follow its standard practice of reseeding of disturbed areas with native species following construction to limit colonization by invasive species. In order to protect populations of protected and sensitive plant species, Fairchild AFB would also demarcate areas of concern in the field prior to construction work and instruct work crews to clean equipment prior to entering these areas to avoid introducing invasive plant propagules from other areas.

Overall, the proposed projects would have a low likelihood of resulting in impacts to protected and sensitive species. However, the following measures should be followed to avoid impacts to sensitive species:

- Survey for sensitive species that could potentially be present in work areas for Project MD02, based on habitat type and season.
- If sensitive species are detected, time work to avoid critical breeding/nesting periods.
- Avoid trenching through the remnant agricultural ditch during March and April to reduce the likelihood of disturbing Columbia spotted frogs during the breeding period.

The proposed projects would be conducted in a manner to avoid adverse effects on migratory birds to the extent practicable.

Provided steps are taken to survey for sensitive and protected species for Project MD02, and appropriate avoidance measures are implemented, as necessary, the proposed projects would not result in a decrease in the population abundance, fitness, or regional distribution of any protected or sensitive species, or result in the permanent loss of irreplaceable habitat. Therefore, no significant impacts to protected or sensitive species would occur.

4.8.2 No Action Alternative

Under the No Action Alternative, there would be no interaction with biological resources and, therefore, no adverse impacts on vegetation or wildlife, including protected and sensitive species. Habitats and species distributions of Fairchild AFB would remain similar to their baseline conditions.

4.9 CULTURAL RESOURCES

This section addresses potential impacts and effects to cultural resources within or adjacent to the 13 individual proposed project areas.

Impacts to cultural resources can occur by physically altering, damaging, or destroying a resource or by altering characteristics of the surrounding environment that contribute to the resource's significance. To evaluate impacts, historic properties are subject to the criteria of adverse effect found at 36 CFR 800.5.

Direct impacts or effects are typically caused by physical changes to a historic property. Indirect effects usually occur through increased use, visual disturbance, or noise. A significant impact or adverse effect to historic properties occurs when an undertaking or action alters, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the NRHP.

Adverse effects or significant impact to historic properties can include: (1) physical destruction of or damage to all or part of the property; (2) alteration of a property, including restoration, rehabilitation, repair, maintenance, and stabilization; (3) removal of the property from its historic location; (4) change of character in the property's use or of physical features within the property's setting that contribute to its historic significance; and (5) introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.

If an undertaking directly or indirectly affects a property in a manner that does not permanently alter its integrity or NRHP eligibility, this effect is considered not adverse (i.e., not a significant impact).

4.9.1 Proposed Action/Alternatives

Buildings 2025, 2245, and 2050 are the only structures at Fairchild AFB eligible for listing on the NRHP. Building 2025 is within the direct effects APE for proposed project MD01, which entails demolishing the UST and underground OWS at this building. Currently, the UST and OWS are abandoned and no longer functional or in use. They are buried outside the building's structural footprint. As such, they are not currently visible, nor were they visible during the period of historical significance. Accordingly, the UST and OWS are not elements that contribute to the characteristics that make the building eligible for listing on the NRHP. Their loss would not impact the building's integrity of significant historic features, change

the character of the building's use or physical features that contribute to historic significance, or alter setting, or ability to convey feeling or sense of historic importance. The demolition of the UST and OWS would not "diminish the integrity of the properties' significant historic features" (36 CFR Section 800.5(a)(2)(v)). Indirect effects to this building or Building 2050—which is in the indirect effects APE—from proposed project MD01 noise and visual impacts would be temporary, and would not affect integrity or characteristics that make the buildings eligible for inclusion on the NRHP. Land use setting would remain consistent with the buildings' intended uses on a military facility. There would be no significant direct or indirect impacts or adverse effects to Buildings 2025 and 2050 from the implementation of proposed project MD01.

Buildings 2025 and 2050 are within the 1,000-foot indirect impacts APE for proposed projects A01, OM03, OM04, and MD01; however, there would be no adverse indirect effects or significant indirect impacts. Proposed project A01 is 650 feet from Building 2050. Proposed project OM03 is 410 feet from Building 2025, and 550 feet from Building 2050. Proposed project OM04 is 350 feet from Building 2050. The history of development at Fairchild AFB has changed each building's relationship with surrounding facilities and features. The viewshed and setting of these historic properties has already been significantly altered due to demolition of the historic flightline—an effect that was mitigated per the terms of the Fight Line MOA (Fairchild AFB 2012b). Flat-lying concrete replacement associated with proposed project OM04 would not significantly alter the viewshed from Building 2050. As proposed project MD01 involves demolishing USTs and OWSs that are buried and not currently nor historically visible, indirect effects would not alter the historic setting or viewshed from these properties. Given these factors, as well as the previous loss of integrity of setting, and that the locations are adjacent to an active flightline, it is unlikely that any indirect visual, atmospheric, or audible effects would be introduced that would further "diminish the integrity of the property's significant historic features (36 CFR Section 800.5(a)(2)(v))."

Buildings 1005 and 1012 are former NRHP-eligible historic properties that were once contributing elements to the former Flightline Historic District. Both structures have been mitigated for demolition per the terms of the Flightline MOA (Fairchild AFB 2012b). Building 1012 is slated for demolition under proposed project OM06. Its UST and OWS are to be demolished as part of proposed project MD01. The UST at Building 1005 is slated for demolition as part of proposed project MD01. As effects and impacts to these former historic properties have been mitigated, they are neither adverse nor significant.

None of the other structures involved with MD01—Buildings 1204, 2319, 1258, 2071, 1019, 1039, 1249, and 2319—are historic properties. Proposed project A01 entails upgrades to the Intelligence Facility, Building 2125, which was found not eligible for the NRHP with concurrence from the Washington SHPO in 2008 (Fairchild AFB 2018e). Proposed project T01 involves an addition to Building 1249, which is a modern building. The direct and indirect APEs for proposed projects OM01, OM02, OM03, OM04, OM05, OM06, TO2 M01, M02, and MD02 have been surveyed and characterized for archaeological and historic resources, with SHPO concurrence, and do not contain any archaeological sites, historic structures, historic districts, cemeteries, sacred sites, TCPs, or other resources identified as eligible for listing on the NRHP (Fairchild AFB 2018e).

Fairchild AFB will initiate government-to-government consultation regarding the Proposed Actions with the following Native American Tribes: the Coeur d'Alene Tribe, the Confederated Tribes of the Colville Reservation, the Kalispel Tribe of Indians, and the Spokane Tribe of Indians. These four Tribes will be invited to comment on potential impacts to cultural resources from the proposed projects. All correspondence associated with tribal consultation is provided in Appendix A of this document.

In the case of inadvertent discovery of cultural resources, work on-site would cease and the discovery immediately reported to the Fairchild AFB cultural resources manager, who would initiate the Section 106 process. The archaeological discovery would be initially treated as potentially eligible for listing on the NRHP. If further evaluation reveals that the site is not eligible for NRHP listing with Washington SHPO concurrence, then Air Force activity could resume.

4.9.2 No Action

Under the No Action Alternative, the proposed projects would not be implemented and, as a result, impacts to cultural resources would not be anticipated.

4.10 EARTH RESOURCES

This section discusses potential impacts to earth resources located within the proposed project areas. The analysis considers exposure to potential geologic hazards and potential for soil erosion and soil limitations. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development. The analysis also considers the suitability of mapped soil types for the proposed projects.

Impacts to soils can result from disturbances, such as grading during construction activities, that expose soil to wind or water erosion. Construction of new buildings and associated paving results in a long-term loss of soil function in the building footprint.

Impacts resulting from geologic hazards can occur where the potential for harm to persons, property, or the environment is high due to existing hazards.

Impacts would be considered significant if any of the following were to occur:

- Disruption of unique geologic resources.
- Substantial soil erosion or loss of topsoil.
- Construction of one or more structures in an area that is has unsuitable soil characteristics for the proposed use and would expose people or structures to an elevated risk of loss, injury, or death.
- Increased vulnerability to a geologic hazard and the probability that such an event could result in an injury.

4.10.1 Proposed Action/Alternatives

Topography and Physiography

There would be long-term, negligible, adverse impacts on topography as a result of demolition, site preparation (i.e., grading, excavating, and recontouring), and construction activities associated with the proposed projects. Because Fairchild AFB is fairly level in elevation, impacts would not be considered significant. Excavated soils would be reused for a suitable use on-site or hauled off-site for appropriate reuse or disposal, and would not result in the creation of earthen mounds on base.

Geology

Geological resources would not be disturbed under any of the proposed projects, because excavation would be minimal and would not alter bedrock. Therefore, it is not anticipated that impacts to geology would occur.

Soils

Impacts to soil are assessed based on the information presented in Table 4.10-1, which provides a summary of the estimated amount of soil lost to new impervious surface and soil disturbance associated with each of the proposed projects, and gives the construction suitability rating for the proposed development site, based on information provided by USDA NRCS (2017b) for the soil types listed in Table 3.10-1.

Table 4.10-1: Summary of Soil Impacts and Site Suitability for the Proposed Projects

Proposed Project	Amount of New Impervious Surface (sq ft)	Approximate Area of Disturbance (sq ft)	Construction Suitability Rating
A01—Upgrade Intelligence Facility	A01: 2,200 A01-1: 0 A01-2: 2,200	2,640	Somewhat Limited
OM01—Connect Rambo Gate Search Facility to Water Line Distribution	0	660	Not Limited
OM02—Construct Potable Water Intertie to City of Spokane Water System	0	3,200	n/a
OM03—Construct Covered Refueler Parking	0	Negligible (minor earthwork for footings; currently paved)	Somewhat Limited
OM04—Construct Pull-through Airfield Parking Spots	490,000	588,000	Not Limited/ Somewhat Limited
OM05—Construct New Hydrant Refueling System	36,000	43,200	Not Limited/ Somewhat Limited
OM06—Demolish Building 1012	-70,000	84,000	n/a
T01—Renovate Logistics Building	T01: 4,000 T01-1: 0	T01: 4,800 T01-1: 0	Not Limited
T02—Construct Water Survival Training Facility	T02: 95,000 T02-1: 42,250	T02: 114,000 T02-1: 50,700	Not Limited
M01—Add/Alter Thorpe and Rambo Road Gate	30,000	36,000	Not Limited
M02—Construct Entomology Facility	6,400	7,700	Not Limited
MD01—Demolish USTs and OWSs	0	2,000[a]	n/a
MD02—MSA and Pad 5 Drop Zone Electrical Underground	0	140,000	n/a
Total (maximum)	**593,600 (13.6 acres)**	**1,023,560 (23.5 acres)**	--

Notes:
Source for construction suitability: USDA NRCS 2017b.
[a] Does not include soil excavation associated with remediation, if necessary.
Not limited = soil has features that are very favorable for building/road construction.
Somewhat Limited = soil has features that are moderately favorable for building/road construction. Limitations can be overcome or minimized by special planning, design, and installation.
n/a = project is not applicable

Short- and long-term minor adverse impacts on soils would be expected from the proposed projects. The primary impacts would include long-term loss of soil function and productivity in areas with new impervious surface, as well as soil compaction, disturbance, and erosion associated with construction

activities. The projected increase in impervious surface (considering the project alternative with the greatest amount of impact for each proposed project) would be approximately 594,000 square feet (13.6 acres) (Table 4.10-1). These impacts would be minor when considered in the context of the total land area of the installation (0.3 percent of the total) and the currently disturbed character and reduced productivity of the project sites. Approximately 23.5 acres of paved and unpaved land would be subject to ground-disturbing activities. In areas that are not currently paved, there would be localized areas of compaction associated with construction. Soil productivity would likely decline in these areas, and loss of soil structure due to compaction from vehicle and foot traffic could result in changes to drainage patterns and increased erosion and sedimentation. However, in many proposed project areas, soils have already been disturbed and compacted during previous construction projects. Additionally, there would be no long-term effect in paved areas (e.g., multiple locations of proposed project MD01), as the function and productivity of soils underneath these areas have already been lost.

Implementation of environmental protection measures and BMPs, including erosion and sediment control measures, would minimize adverse impacts to soil. Because ground-disturbing activities would exceed 1 acre, a Construction General Stormwater Permit would be required (see Section 3.5.1). Under the permit, Fairchild AFB would be required to implement BMPs as part of the Erosion, Sedimentation, and Pollution Control Plan requirements at construction sites. Measures could include installing silt fencing and sediment traps, applying water to disturbed soil, decompacting soils, and revegetating disturbed areas as soon as possible after the disturbance. These measures would reduce soil compaction and loss of soil productivity and would minimize the risk of erosion and sedimentation. Implementation of environmental protection measures would also minimize the potential for and extent of contamination associated with any spills from construction equipment. Removal of unused USTs and OWS under Project MD01 (Demolish USTs and OWSs) could have a minor beneficial impact on soil by removing a source of potential soil contamination. Should contaminated soil be encountered during Project OM06 (Demolition of Building 1012), subsequent remediation activities would have a localized beneficial impact, as the contaminated soils would be removed and disposed of in accordance with all applicable regulations.

The proposed building construction and paving projects would occur in areas where mapped soils are rated “not limited” or “somewhat limited” for small building construction and paved roads (Table 4.10-1). There are no major limitations that would preclude these soil types from development. Site-specific soil testing would be conducted prior to commencement of proposed construction projects to determine whether limitations exist and identify appropriate environmental protection measures to be implemented to minimize adverse impacts.

As discussed in Section 3.10.2, soils in the project areas are already committed to development and are not considered farmland; therefore, impacts to prime farmland would not occur.

Because soil loss and disturbance would occur in an already disturbed location, and given the implementation of BMPs and environmental protection measures to reduce the risk of erosion, no significant impacts to soil resources would occur.

Geological Hazards

No significant impacts related to geological hazards would be expected as a result of the proposed projects. All new construction associated would be designed consistent with requirements established in UFC 3-310-03, *Seismic Design for Buildings*, and EO 12699, *Seismic Safety*, which would reduce the potential for adverse impacts associated with structural failure during or following a seismic event.

4.10.2 No Action Alternative

Under the No Action Alternative, the proposed actions would not be implemented and, as a result, would not result in any impacts to earth resources within most of the individual project areas.

4.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Socioeconomic impacts are assessed in terms of direct impacts on the local economy and related impacts on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed project. A proposed project could have a significant impact with respect to the socioeconomic conditions if it were to result in at least one of the following:

- Substantial change in the local or regional economy, employment, or business volume.
- Substantial change in the local or regional population and in housing, education, installation services, or public services from the increased or decreased demands of the population change.

4.11.1 Proposed Action/Alternatives

Socioeconomic Resources

Short-term, minor, beneficial impacts on the local economy would occur from the proposed construction, demolition, and renovation projects at Fairchild AFB. These activities would stimulate the local economy through the employment of construction workers and the purchase of construction-related materials and other goods and services, as well as secondary purchases of goods and services. Due to the short-term nature of construction, the economic benefits would be temporary.

According to USAF, it is estimated that approximately $86 million in military construction and facility sustainment, restoration, and modernization expenditures would occur from FY 2020 through FY 2023 due to the proposed projects. The proposed construction and associated expenditures could generate additional jobs, most likely in the construction industry, but also in other industries, such as retail, that would generate additional indirect and induced income in Spokane County.

In 2017, Spokane County had a civilian labor force of 236,389 people of which 13,474 (5.7 percent) were employed in the construction industry (U.S. Census Bureau 2017b). It is expected that the local labor force would be sufficient to meet the demand for new jobs in the construction and other industries without a migration of workers into the area. Therefore, no impacts on population would occur as a result of the proposed projects because it is expected that all construction workers would be from the local or regional area.

There would be no anticipated change to the number of personnel employed or stationed at Fairchild AFB as a result of the proposed projects; therefore, no significant short- or long-term impacts on demographics or social services and conditions would be expected, including demand for housing, education, law enforcement, fire protection, emergency medical services, and medical services.

Environmental Justice

The proposed projects would occur entirely on Fairchild AFB. Possible adverse impacts from construction and demolition activities could include increased traffic and noise levels and decreased air quality; however, these impacts would be short-term and intermittent, and would likely only affect on-installation populations. Therefore, disproportionate impacts on minority or low-income populations would not be expected. Significant impacts would not occur.

4.11.2 No Action Alternative

The No Action Alternative would not result in any additional socioeconomic or environmental justice impacts. The proposed construction, demolition, and renovation projects would not occur, and there would be no associated expenditures that would provide short-term construction employment or generate additional indirect and induced income beyond the scope of normal conditions and influences within Spokane County.

4.12 INFRASTRUCTURE

The analysis to determine whether impacts on infrastructure are significant primarily considers whether a proposed project would exceed capacity or place unreasonable demand on a specific utility. Impacts might arise from energy needs created by either direct or indirect workforce and population changes related to installation activities. It is assumed that construction contractors would be informed on utility locations prior to any ground-disturbing activities that would result in unintended utility disruptions or human safety hazards. All construction would be conducted in accordance with federal and state safety guidelines. Any permits required for excavation and trenching would be obtained prior to the commencement of construction activities.

Impacts on transportation systems would be considered significant if they degrade the existing transportation infrastructure by creating unacceptable traffic or delays on existing roadways, excessive delays at installation access gates, or shortfalls in parking.

4.12.1 Proposed Action/Alternatives

Electrical Supply

Short-term, negligible, adverse impacts on the electrical distribution system would occur during construction of many of the proposed projects. Electrical service interruptions could occur should aboveground or underground electrical lines need to be rerouted, and when new or renovated facilities are connected to the installation's electrical distribution system. Project MD02 (MSA and Pad 5 Drop Zone Electrical Underground) would have a beneficial effect on the electrical supply system by placing existing overhead electrical lines underground. This would protect the lines from weather-related outages and other potential damage that could interrupt electrical service on the installation. Long-term, beneficial impacts on electrical systems would be expected from the demolition of aged facilities with outdated electrical systems (e.g., Projects OM06 and MO2) and construction of new facilities with updated, energy-efficient electrical systems. Because the installation is supplied with adequate electric power and the distribution system adequately serves existing mission needs and has additional capacity to meet the needs of the proposed projects during construction and operation, the proposed projects would not have significant impacts on the electrical supply system.

Water Supply

Short-term, negligible, adverse impacts on the water supply system would occur during the proposed construction, demolition, and renovation as existing water lines are connected to new buildings or capped as appropriate. Project OM01 (Connect Rambo Gate Search Facility to Water Distribution Branch Line) would have a long-term beneficial impact by providing more reliable water pressure and improving the performance of the fire suppression system. Project OM02 (Construct Potable Water Intertie to City of Spokane Water System) would be a major upgrade to the water supply system at the installation. By creating a new intertie with the city's water supply system, the project would have a long-term beneficial impact by providing a redundant supply source that would enhance the dependability and security of the existing water supply system. While Project T02 (Construct Water Survival Training Facility) would initially require a substantial amount of water to fill the two training tanks, ongoing long-term water use would be minimal. Because the water supply system currently provides an adequate supply of potable water to meet duration, flow rate, and pressure requirements, and two of the proposed projects would improve the dependability of the existing system, the proposed projects would not have significant short- or long-term adverse impacts on the water supply system.

Sanitary Sewer System

Short-term, negligible to minor, adverse, and long-term, beneficial impacts on the sanitary sewer and wastewater system would be expected from construction and implementation of the proposed projects. Short-term interruptions in sanitary sewer and wastewater treatment could be experienced when facilities are disconnected from or connected to the sanitary sewer and wastewater systems on the installation. However, the discontinuation of sanitary sewer and wastewater treatment would be temporary and coordinated with area users. Long-term, beneficial impacts on the sanitary sewer and wastewater system would be expected from construction of new updated facilities. Any long-term increases in demand for sanitary sewer and wastewater treatment upon completion of new construction would be small relative to the capacity of the existing system. Given that the condition and capacity of the existing sanitary sewer system is considered adequate for current mission requirements, and it has additional capacity to meet the needs of the proposed projects during construction and operation, the proposed projects would not have significant impacts on the sanitary sewer system.

Natural Gas Supply

Short-term, negligible to minor, adverse, and long-term, beneficial impacts on the natural gas system would be expected from construction and implementation of the proposed projects. Short-term natural gas interruptions could be experienced during construction, demolition, and renovation activities as facilities are disconnected from or connected to the natural gas supply system. However, the interruption of natural gas services would be temporary and coordinated with area users. Any long-term increases in natural gas demand upon completion of new construction would likely be small relative to the capacity of the existing natural gas supply system, and no significant short- or long-term adverse impacts from the proposed projects are anticipated.

Liquid Fuel Supply

Only one of the proposed projects would involve the liquid fuel supply system at the installation. Project OM05 (Construct New Hydrant Refueling System) would have a beneficial effect on the existing liquid fuel supply system by increasing the efficiency of refueling operations at spots 29, 30, and 33 through 47 at the south end of the flightline.

Stormwater Drainage System

Short-term, adverse impacts could occur from construction and implementation of the proposed projects due to vegetation removal and compaction of surrounding soils by construction equipment, which could result in increased soil erosion and transport of sediment in stormwater runoff during construction and demolition activities. To minimize impacts, all contractors would be required to comply with applicable statutes, standards, regulations, and procedures regarding stormwater management. Additionally, Fairchild AFB would be required to incorporate design elements that maintain or restore predevelopment site hydrology to the maximum extent practical, with regard to rate, volume and duration of discharge from the site (USEPA 2009). A variety of stormwater controls and BMPs would be incorporated into construction plans, which would include planting native vegetation in disturbed areas as soon as possible following construction activities; constructing retention facilities; and implementing structural controls such as interceptor dikes, swales (excavated depressions), silt fences, straw bales, and other storm drain inlet protection, as necessary, to prevent sedimentation in inlet structures.

Long-term adverse impacts to the stormwater system could occur if the capacity of the existing system is not sufficient to handle runoff from the approximately 13.6 acres of new impervious surface that would result from development of the proposed projects. This could be particularly problematic in the spring when the presence of perched groundwater in many areas of the base increases the chance of localized flooding/ponding. Prior to construction of projects that would create large amounts of impervious area,

such as Project OM04 (Construct Pull-through Airfield Parking Spots), a detailed drainage analysis would be conducted to identify any needed improvements to the stormwater system. If the analysis determines that improvements or increased capacity are needed, those improvements would be completed as part of the proposed project. Therefore, no significant short- or long-term adverse impacts to the stormwater drainage system from the proposed projects are anticipated.

Communications System

Short-term, negligible to minor, adverse, and long-term, beneficial impacts would be expected from construction and implementation of the proposed projects. Short-term interruptions of communications systems (e.g., copper and fiber cable used for voice, data, and video communications) could be experienced when facilities are disconnected from or connected to the communications system on the installation. However, the discontinuation of communications would be temporary and coordinated with area users. Long-term, beneficial impacts would occur in association with communication systems installed in new or remolded buildings. No significant short- or long-term adverse impacts to the communications system on the installation from the proposed projects are anticipated.

Solid Waste Management

Short-term, minor, adverse impacts would be expected from increased construction and demolition debris generated as a result of the proposed projects. Solid waste generated from construction and demolition activities would include building materials such as solid pieces of concrete, metals (e.g., conduit, piping, and wiring), and lumber. Contractors would be required to recycle construction and demolition debris to the maximum extent practicable in accordance with installation policy, thereby diverting it from landfills. The contractor would dispose of non-recyclable construction and demolition debris at an off-site permitted landfill facility in the vicinity of Fairchild AFB. No significant adverse solid waste management impacts from the proposed projects are anticipated.

Transportation System

Short-term, minor, adverse impacts on the transportation network would be expected from implementation of the proposed projects. Potential impacts would be associated with increased traffic and parking requirements from construction vehicles and equipment. Construction and demolition activities would require the delivery of materials to, and removal of debris from, project areas; however, construction traffic would comprise a small percentage of the total existing traffic on the installation and on public roadways. Trucks associated with these activities would access the installation via the Rambo Gate. Construction crews would access the installation via the main gate or the Rambo Gate. Many of the heavy construction vehicles would be driven to the project areas and kept on-site for the duration of construction and demolition activities, resulting in relatively few additional trips. The proposed projects would occur over a span of 4 years, at different locations on Fairchild AFB, which would disperse construction traffic in time and space. Any potential increases in traffic volume associated with construction and demolition activities would be temporary.

Project OM02 (Construct Potable Water Intertie to City of Spokane Water System) would require temporary lane closures on a 0.5-mile segment of Rambo Road in areas where the new water line would be installed in the existing road right of way. Vehicle traffic would be limited to one lane in areas of construction, and flaggers would be used to safely manage traffic through these areas. Compete closure of Rambo Road is not anticipated. Project M01 (Add/Alter Thorpe and Rambo Road Gate) would require temporary closure to vehicle traffic during reconfiguration of the gate to accommodate two-way traffic and to install traffic calming devices and final denial barriers. Vehicle traffic would be diverted to other gates during these temporary closures. Project OM05 (Construct New Hydrant Refueling System) would

require similar temporary lane closures along streets between Building 2401, the new pump house, and Building 2151 during installation of the new fuel line.

Long-term changes to existing on-installation traffic volumes and patterns are anticipated with the completion of Project M01. The additional through-put capacity and longer hours of operation at the Thorpe-Rambo Gate would increase the number of vehicles traveling on Rambo and Thorpe Roads, but would provide some traffic relief at the main gate. Because no personnel would be added to the installation under any of the proposed projects, no long-term increase in overall vehicle traffic or parking demand would be anticipated. No significant impacts to the transportation system would occur.

4.12.2 No Action Alternative

Under the No Action Alternative, minor short-term disruptions to existing utilities and the local road network would not occur. Without the proposed projects, periodic reductions in water pressure at the Rambo Gate Search Facility would continue to jeopardize the performance of the fire suppression system. The main water supply line to the base would continue to operate without a redundant high-capacity supply option. The Thorpe-Rambo Gate would continue to operate below needed capacity and out of compliance with UFC 4-02201 standards, and traffic congestion, delays, and safety hazards at the main gate would continue. Overhead electrical lines in the MSA and Pad 5 Drop Zone would continue to be vulnerable to weather-related damage and outages.

4.13 OTHER NEPA CONSIDERATIONS

4.13.1 Unavoidable Adverse Effects

This EA identifies any unavoidable adverse impacts that would be required to implement the Proposed Action and the significance of the potential impacts to resources and issues. Title 40 CFR Section 1508.27 specifies that a determination of significance requires consideration of context and intensity.

Construction of new facilities and infrastructure improvements would impact the local project areas at Fairchild AFB. The severity of potential impacts would be limited by regulatory compliance for the protection of the human and natural environment.

Unavoidable-long-term adverse impacts associated with implementing the Proposed Action would include loss of soil function and productivity, loss of vegetation, and loss of wildlife habitat over approximately 15 acres. Unavoidable short-term adverse impacts associated with implementing the Proposed Action would include: temporary erosion and sedimentation from soils disturbance, a temporary increase in fugitive dust and air emissions during construction, intermittent noise, and minor alterations to local traffic. However, these effects are considered minor and would be confined to the immediate area. Use of environmental controls and implementing controls required in permits and approvals obtained would minimize these potential impacts.

For the Proposed Action to be accomplished, these impacts would occur. The action is required to provide facilities and infrastructure improvements necessary to support the mission of the 92 ARW and tenant units.

4.13.2 Relationship of Short-Term Uses and Long-Term Productivity

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with demolition and construction activities for buildings and infrastructure. The long-term enhancement of productivity would be those effects

associated with new and improved facilities and infrastructure after implementation of the Proposed Action.

The Proposed Action represents an enhancement of long-term productivity for personnel and operations at Fairchild AFB. The negative effects of short-term operational changes during construction activities would be minor compared to the positive benefits from improved facilities and infrastructure. Immediate and long-term benefits would be realized for transportation, energy efficiency, and safety after completion of the Proposed Action.

4.13.3 Irreversible and Irretrievable Commitments of Resources

This EA identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action, if implemented. An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from loss of resources (e.g., endangered species) that cannot be restored as a result of the Proposed Action. Irreversible and irretrievable commitment of resources from the proposed projects includes habitat removal of approximately 15 acres for construction and any potential injury or mortality of wildlife (including protected species, although unlikely).

4.14 CUMULATIVE EFFECTS

This EA considers the effects of cumulative impacts as required in 40 CFR Section 1508.7 and concurrent actions as required in 40 CFR Section 1508.25[1]. A cumulative impact, as defined by the CEQ (40 CFR Section 1508.7) is the "…impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Cumulative impacts may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location (i.e., overlapping geographic location) or during a similar time period (i.e., coincidental or sequential timing of events). The impacts may then be incremental and may result in cumulative impacts. Actions overlapping with or in close proximity to a proposed action can reasonably be expected to have more potential for cumulative impacts on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide in the same time frame tend to offer a higher potential for cumulative impacts.

This cumulative effects analysis considers past and reasonably foreseeable future actions. For most resources, the spatial area for consideration of cumulative effects (i.e., the ROI) is Fairchild AFB, although a larger area is considered for some resources, as disclosed in Chapter 3. An effort was undertaken to identify projects at Fairchild AFB and in the areas surrounding the installation for evaluation in the context of the cumulative effects analysis. This was further developed through review of public documents and information from various applicable agencies.

Past activities are those actions that occurred within the geographic scope of cumulative effects that have shaped the current environmental conditions of the project area. Fairchild AFB was constructed in 1942 and named the Spokane Air Depot while it served as a repair depot for damaged aircraft during World War II. The installation's boundaries have increased more than three times in size since its initial construction, and the facilities and infrastructure have undergone several major periods of construction and reconstruction to accommodate student training loads and new missions and commands (Fairchild AFB 2010). For many resource areas, such as biological resources and hazardous materials and waste, the effects of past actions are now part of the existing environment and are included in the description of the affected environment.

Environmental Consequences

The scope of the proposed, past, ongoing, and future projects relevant to the cumulative impact analyses include those involving demolition, site preparation, facility/infrastructure construction, maintenance, repair, and noise-generating activities within or near Fairchild AFB. These actions could have an incremental impact on the resources analyzed within this EA. Current/ongoing training/flight activities contribute to the existing noise environment, which is described in baseline discussions presented in Chapter 3.

There are many ongoing activities at Fairchild AFB to support current and future goals of installation operations. As funding becomes available, there may be opportunities to upgrade, renovate, or expand existing mission activities or new programs. The IDP identifies more than 50 potential development projects that will be constructed in the next 5 years (short-range), next 5 to 10 years (medium-range), and more than 10 years in the future (long-range) (Fairchild AFB 2014a).

Present and reasonably foreseeable future actions for the ROI, are listed in Table 4.14-1. Information on future projects on Fairchild AFB was compiled based on information available at the time of this EA, These development projects, which are likely to occur between FY 2019 and 2024, include 14 construction projects, one demolition project, 10 maintenance projects, and 50 repair projects. Projects include four construction projects and six repair projects needed to accommodate the 12 additional KC-135 Stratotanker refueling aircraft that will begin operations at the installation in FY 2020. The 12 additional KC-135 aircraft will be gradually added to the installation and all aircraft will be operational by September 30, 2020. The projects in Table 4.14-1 supersede the list of projects scheduled for implementation over the next 5 years in the IDP. In addition to the projects detailed in this table, it is anticipated that other similar types of installation development projects (construction, infrastructure, transportation, and airfield projects) will occur at Fairchild AFB over the medium- and long-range, although specific projects have not yet been identified.

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
Construction Projects		
2019	ADAL Flight Simulator	Construct a 4,250-square-foot addition onto the southwest face of Building 2048 to provide an additional flight simulator bay and office space.
2019-2020	Add/Alter Security Measures, Main Gate	Add/replace security measures to include the replacement of barriers with newest technologies (active vehicle barrier replaced with Net-Grab system, new indicators/informational signage, new gates and any other measures to bring the gate to new UFC standards). Add a 160-square-foot facility addition to check house for restroom, personal storage, and desk space. Renovate facility to provide efficient electric heating for facility.
2020	Add/Alter Fitness Center	Construct a 12,000-square-foot addition on the northwest face of Building 2379 to provide additional indoor fitness/athletic space. Renovate 10,000 square feet of Building 2379 to reconfigure the basketball court.

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
2020	Construct New Base Operations Facility	Construct a new 62,258-square-foot base/squadron operations facility. The new facility would be sited partially on a parking lot and landscaped field north of Building 1. The existing 21,807-square-foot base/squadron operations facility (i.e., Building 1) would be demolished following construction of the proposed facility. Approximately 33,777 square feet of the parking lot would also be demolished.
2020	Construct New Entry Control Facility, X-Mas Tree	Create a permanent Entry Control Point to the Alert Area in accordance with UFC 4-022-03 that supports Operation Noble Eagle and U.S. Strategic Command missions in place of current temporary structures.
2020	Construct Government Electric Vehicle Charging Stations	Provide fast charging stations for new Government Electric/Hybrid Vehicles
2020	Expand Urban Evasion Lab Security Fence	Expand Urban Evasion Lab area to provide more realistic training and to accommodate added capabilities in order to enhance the effectiveness of the urban environment training missions.
2021	Add/Alter Aircraft Parts Storage	Construct a 20,699-square-foot addition onto the southeast face of Building 2045 to provide additional storage space for flightline supplies and equipment. Approximately 1,798 square feet of Building 2045 would be renovated with high efficiency shelving. A gate onto the flightline would be relocated, and a new 11,248-square-foot parking lot would be constructed.
2021	Construct Hostage Camp Restroom	Provide a permanent sanitary latrine for Resistance Training to improve sanitation and hygiene for 4,000 students annually and increase realism of training at the SERE Hostage Camp.
2022	Repair Airfield Stormwater System	Mitigate the Bird Aircraft Strike Hazard associated with the open water ditches and ponds on the south side of the flightline, leveraging the 2016 airfield stormwater study recommendations.
2023	Construct New Air Traffic Control Tower	Construct a new Air Traffic Control Tower to replace the existing aging tower.
2023	Construct Heritage Park Expansion	Improve grounds (155,000 square feet) with an irrigation system; pour footings and concrete pad, including lighting; pave asphalt sidewalk around existing train cars and pad. Remove trees and fire hydrant.
2024	Construct New Resistance Training Facility	Construct addition and modernize Resistance Training Facility (Building 1712) to meet new requirements.
Demolition Projects		
2020	Demolish Buildings B1231, T1232, B1448, B1467	Demolish old pump houses and associated tanks that are no longer being used and deteriorated tanks that are no longer usable.

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
Maintenance Projects		
2019	Airfield Striping	Remove and repaint airfield pavement stripes. This project will correct restricted area lines, runway markings, and deceptive pavements markings to conform with Engineering Technical Letter 04-2 as part of an annual requirement due to abrasion of snow removal activities.
2019	Renovate Deployment Processing Center, Building 1001	Renovate Building 1001 to utilize unused and under-utilized space for pallet loading.
2020	Refinish Floor Coating, Building 2163	Strip and reseal concrete floor to restore protective finish.
2020	Parking Lot Maintenance, Building 2115	Repair the parking lot servicing Building 2115 via demolition of existing pavements and reconstruction of base and sub base. Site will be regraded to ensure adequate drainage. Demolish appurtenances and infill existing abandoned steam vaults. Adjust storm drainage to accommodate new site grading. Install new sidewalks and associated curbs. Demolish 30,400 square feet of parking (northeast lot section) and install Low Impact Development solution. Adjust monitoring well grade rings to new grade. Relocate fire hydrants.
2020	Mill-Overlay Maintenance Bong Street	Resurface Bong Street from Mitchell Ave to Seattle Ave.
2020	Replace Windows	Replace aged windows of four facilities (2278, 2392, 2276, and 2393) with energy efficient windows
2020	Roof Maintenance, Building 2040	Restore 48,500 square feet of standing seam metal roofing to restore roof system for an additional 25 years of service life.
2020	Exterior Painting and Brick Cleaning	Sustain Exteriors of buildings (2060, 1003, 2025 2262, 1002, and 1007) as identified by the Facilities Activity Management Plan manager. Facilities: 2060, 1003, 2025, 2262, 1002, 1007
2021	CES Complex Roads and Parking Maintenance, Building 2451	Sustain roads and parking lots in the Civil Engineer area for an additional 15 years and improve flow/layout where needed as identified by the Transportation and Airfield Pavement Manager.
Repair Projects		
2019	Alter New Central Tool Kit	Renovate 27,749 square feet of the interior and exterior of Building 1017 to provide a new Central Tool Kit. Four new awnings would be constructed onto the sides of the building and 9,451 square feet of pavement beneath and immediately adjacent to the proposed awnings would be replaced. Roll-up hangar doors would be installed.

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
2019	Alter Squad Operations/AMU	Renovate 25,545 square feet of the bottom floor of Building 2005 to accommodate additional air refueling squadron and aircraft maintenance personnel.
2019	Alter Hangar Bay for ISO	Renovate 3,400 square feet of the interior of Building 2050 to provide additional space for aircraft maintenance personnel.
2019	Repair Electrical Distribution System, Building 2050	Replace main switchgear, load centers, cables, conduit, buss work, and distribution transformers, from the main service transformers outside the building up to, and including, the panel boards that distribute branch wiring. Minor electrical distribution system demolition will also occur.
2019	Repair Electrical Distribution Switches	Replace Medium Voltage (15kV) switches on the main electrical distribution system.
2019	Repair HVAC, SERE Parachute, Building 1254	Replace HVAC system including condensing units with its Air Handling Units' associated direct expansion cooling coils, gas-fired furnace, gas-fired unit heaters, and exhaust fans. Add a HVAC system with humidifiers and lighting fixtures to serve parachute packing and training room 122. Add catwalk/platform at Air Handling Unit-2 to provide safety access. Add high point air vent and low point drain to fire protection sprinkler piping systems.
2019	Repair Roof, Building 2115	Replace standing seam roof deck for all panels between the clear stories for Building 2115. Demolish and dispose of existing standing seam roof off-site. Repair underlying structure to ensure structural integrity and proper drainage.
2019	Repair Building 2097 1st and 2nd Floor Water Damage	Remove and replace any insulation, drywall, and carpet, damaged by the water/clean-up. Paint/skim coat/abate new/existing sections of walls damaged by the water.
2019	Renovate (SUS) Well 2	Repair the building shell, replace chlorine containment system and add proper HVAC, piping, framing, and security.
2019-2020	Repair Hydrant Fueling System and Pavements, spots 25-28	Demolish and replace 400,000 square feet of pavement on the parking ramp at aircraft parking spots 25 to 28. Replace approximately 3,200 linear feet of fuel line from Building 2028 to Spot 28. Install 1,200 linear feet of looped fuel hydrant system and replace existing hydrants for spots 25 to 28.
2020	Repair SERE Campus Sidewalks	Repair, by replacement, the cracked and uneven sidewalks on the SERE campus. Replacement is required due to lack of sufficient base course, which will be added during the replacement process, to minimize a recurrence of heaving after the repair
2020	Repair/Improve Warehouse, Bay A, Building 2447	Repair fire suppression deficiencies to allow full-height shelving. Construct minimal offices for personnel working out of this building.

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
2020	Replace Vehicle Exhaust System and HVAC Retro-Commissioning, Fire Station, Building 3	Replace vehicle exhaust system in the vehicle bay, flush/clean/fill the heating and chill water lines, and perform a retro-commissioning of the entire HVAC system, including the snow melt system. Replace insulating material at wall/roof joint in detached vehicle bay.
2020	Convert Aircraft Maintenance Dock to Fuel System Maintenance Dock	Renovate 32,000 square feet of the interior of Building 1007 for conversion to the installation's primary fuel cell.
2020	Repair Electrical Distribution System, Building 2050	Replace main switchgear, load centers, cables, conduit, buss work, distribution transformers, from the main service transformers outside the building up to, and including, the panel boards that distribute branch wiring. Minor electrical distribution system demolition will also occur.
2020	Renovate Wash Rack, Building 2050	Renovate HVAC, electrical, plumbing, and other infrastructure to accommodate the installation of a modern wash rack that can handle larger equipment volume.
2020	Renovate Satellite Fire Station, Building 1314	Extend front of vehicle bay by approximately 4 feet to accommodate larger apparatus; repair/replace HVAC; repair/extend fire detection system; update lighting and other interior finishes as needed.
2020	Renovate/Alter Administrative Spaces to SCIF, Building 2040	Alter three office spaces to meet SCIF requirements. Design and construction will include demolition of existing windows, installation of wall and ceiling, and modifications of utility infrastructure to support the electrical, HVAC, and security/detection requirements.
2020	Exterior/Interior/Plumbing/Boiler and Electrical Repair, Warrior Dining; Building 2262	Repair building envelope sealant, flashings, and coating and repair interior damaged wall in the electrical and mechanical room. Replace gutter and downspout including heat tape installation and exterior doors at the loading dock. Provide paint and fall protection on roof. Replace plumbing piping and re-line existing underground sanitary main. Convert HVAC heating system and domestic water system from steam heating to gas-fired hot water system and compatible to existing Energy Management Control System. Add cooling coil for kitchen makeup air unit. Replace walk-in refrigeration system, sump pumps and exhaust fan. Reconfigure the electrical wiring on existing backup generator. Replace floor tile and carpet due to high traffic usage. Install security camera system for facility. Provide roof fall protection.
2020	Repair Sewer Lines, Basewide	Reduce infiltration through life cycle replacement of sanitary sewer lines.
2020	Repair Taxiway P from TW D to TW G	Remove all existing asphalt shoulder pavements. Remove and/or rehabilitate all existing edge lighting vaults, light, and supporting appurtenances. Reconstruct shoulder structures to UFC standards to a new width of 125 feet.

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
2020	Repair Exterior and Roof, Building 2050	Repair solid doors, overhead doors, sliding doors, and windows. Repair high-bay/low-bay roof. Replace siding and fix exterior as needed.
2020	Construct Library area to Training, Building 1256	Convert room 122D, Building 1256 into a SERE Training Operation Center with 30 fully capable/compliant Secure Internet Protocol Router and Non-secure Protocol Internet Router capabilities.
2020	Replace Arts and Craft Storefront, Building 2447	Remove existing roll-up door and replace with glass storefront double doors and windows. Remove existing man door, filling in to match existing exterior. Extend interior "upper wall" to roof deck to help minimize drafts and loss of heat.
2021	Repair Restroom Interiors, Building 1724	Repair/Restore existing restroom including sewage lift station, water heaters, bathroom exhaust fans, plumbing fixtures and interior finish.
2021	Repair Taxiway Echo Shoulders	Replace failing shoulders, right-size and reduce Foreign Object Debris hazards. Replace non-compliant lights.
2021	Repair Approach Lighting Electrical Vaults	Full rehabilitation of the airfield lighting system (excluding flood lighting), including installation of a drainage system, to ensure another 20 years of life cycle.
2021	Renovate Outdoor Track and Field	Replace soccer field soil with new soil that is free from rocks and debris. Replace track with rubberized asphalt track. Build covered concrete exercise pad.
2021	Renovate Security Forces Squadron Building 2071	Renovate, consolidate, and right-size the 92nd Security Forces Squadron Building 2071 in accordance with the 2017 Planning Charrette Report document. Replace Generator and Demolish UST. Add exterior three-sided storage structure to south parking lot.
2021	Repair Exterior Civil Engineering, Building 2451	Update, modernize and right-size Building 2451, Civil Engineering complex. Work will include structural modifications, reconfiguration of space, and replacement of electrical/HVAC/Plumbing/Fire systems, new exterior siding, windows, and roofing. Project must include set up of temporary space, possibly in Bay D or temporary trailers.
2021	Right-size TW P from TW A to TW C	Repair Taxiway P's Portland Cement Concrete keel, between Taxiways C and A. This Pavement Section T02A has an area of approximately 24,721 square yards of which individual panels need medium level surface patching repair and medium and joint repair.
2021-2024	Repair HVAC, SERE Billeting, Building 1252, 3 Phases	Repair building in accordance with new building standards and requirements determined by a Planning Charrette Report being performed in 2019.

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
2021-2022	Repair Multi-Bldg Systems Dining Facility, Building 1258	Replace deteriorated roof, exterior and interior doors, interior floors, HVAC system, plumbing systems and code non-compliance fire alarm and detection system and kitchen hood fire suppression system.
2021	Repair Exterior and Roof, Building 2050	Repair solid doors, overhead doors, sliding doors, and windows. Repair high-bay/low-bay roof. Replace siding and fix exterior as needed.
2021-2022	Alternate Command Post, Building 2060	Renovate/reconfigure/expand to consolidate 92 ARW and 141 ARW Command Post functionality into one primary facility that will meet all tasked mission needs, in accordance with the approved 2017 Planning Charrette Report document.
2021-2022	Repair and Renovate Child Development Center, Building 2500	Expand/Renovate the Child Development Center using the current UFC 4-740-14 and the 01 10 10 Design Requirements for Child Development Centers, in accordance with the approved 2019 Planning Charrette Report document.
2022-2023	Repair Admin/Customer functions to Building 2245/2248/2249	Demolish interiors and reconfigure walls to right-size spaces to meet mission needs. Replace HVAC, electrical and fire systems to current standards. Refurbish interior finishes, stairs and make minor repairs to exteriors. (Note: SHPO listed facility).
2022	Repair Fire Suppression, Building 1003	Add proper fire suppression with associated infrastructure upgrades to bring this hangar up to new UFC standards.
2022	Renovate 1st Floor of Building 2007 for Aircraft Maintenance Unit	Renovate 26,900 square feet of the bottom floor of Building 2007 to accommodate the added aircraft maintenance unit.
2022	Repair Airfield Entry Gates	Automate gates to mitigate risk to the airfield and enhance mission effectiveness at high-use locations.
2022-2023	Repair Water Transmission Pipeline, Geiger to Base	Replace or rejuvenate (in accordance with the approved 2022 Planning Charrette Report/Study document) over 6 miles of main water line to ensure another 40 to 60 years of life cycle, considering Airway Heights will be improving 23rd Street into a main arterial road in the next 5 to 10 years.
Relevant State and Local Actions		
Present	Airway Heights Recreation Complex	Construct indoor pools, courts, fitness areas, and meeting rooms proposed for construction as a featured component within a 70-acre recreational complex with multiple outdoor sport fields north of Spokane County Raceway Park (Bjerkin 2018).
Present, Future	Spokane Tribe Economic Project Mixed Use Development	The mixed use development is being constructed in phases on the Tribe's 145-acre property located adjacent to the Airway Heights City limits on Highway 2 and Craig Road. The project consists of retail and commercial development, casino, resort hotel, entertainment, and Tribal Cultural Center and wellness center (Spokane Tribe 2018).

Table 4.14-1: Other Actions Announced for the Project Area and Surrounding Community

Fiscal Year	Project Name	Description
Present, Future	Washington State Department of Transportation 2017-2020 State Transportation Improvement Program/Spokane Regional Transportation Council (SRTC) Horizon 2040 Spokane Metropolitan Transportation Plan	Implement the following actions: • Construct a 0.26-mile multiuse pathway along the southern edge of U.S. 2 between Hayford Road and Deer Heights Road (3 miles east of Fairchild AFB). • Modify the West Plains Transit Center at I-90 and State Route 902 by including parking stalls, bus-only parking lanes, and a pedestrian bridge. • Reconstruct the I-90 interchanges for Medical Lake and Geiger Field (Phase 1 and 2; Washington State Department of Transportation 2019, Spokane Regional Transportation Council 2018).
Present, future	West Plains Amazon Fulfillment Center	Construction of a 640,000-square-foot fulfillment center and parking facilities on an 80-acre parcel at 10019 W. Geiger Boulevard, approximately 3 miles from Fairchild AFB. Construction is scheduled to be completed by August 31, 2019. The facility will employ more than 1,500 people (McLean 2019)
2021 and beyond	Proposed Qiantu K50 electric sports car manufacturing facility on the West Plains area	The proposed project is a 500,000 -square-foot manufacturing facility, with a possible second phase of 800,000 square feet for production of batteries. The operation will be housed in a temporary facility starting in 2019. The permanent facility will be located at the northeast corner of Thorpe and Craig roads, less than a mile from Fairchild AFB. It will be built in two phases: 500,000 square feet to be completed in 2021, and an additional 800,000 square feet to be constructed at a later date (Nellis 2019).
Future	Expansion of Exotic Metals West Plains Facility	Two proposed expansions of the Exotic Metals facility located at 12821 W. McFarlane Road, approximately 1.2 miles from Fairchild AFB. Construction would be in two phases, and would include new manufacturing facilities and employee parking, with the first phase completed in 2020. Each phase would add approximately 150 new staff (Kramer 2019).
Present	West Plains short-line rail	1-mile long track that will link with the Geiger Spur and run east across Craig Road onto Spokane International Airport property. The project will include a transload facility for transferring shipments between trucks and rail. Expected to be completed in 2019 (Edelon 2018).

This EA analysis considers these announced actions from a cumulative perspective in the resource discussions provided in this section. These actions would be evaluated under separate NEPA efforts conducted by the appropriate involved federal agency. Based on the best available information for these proposals by others, the cumulative impact analysis considers them.

Descriptions of the cumulative effects for the resource areas analyzed in this EA are provided in the following subsections.

4.14.1 Land Use

Proposed Action/Alternatives

Although the proposed projects and other planned actions on and off the installation would result in short-term generation of noise associated with construction activities, these actions would not result in incompatibilities with existing or projected land uses. Other planned actions on the installation would also be sited in suitable land use categories and would adhere to the restrictions associated with constraint areas such as noise zones, CZs, APZs, QD arcs, and LUCs. Some loss of open space would occur on Fairchild AFB as a cumulative effect of all planned projects, as captured in the Future Land Use Plan shown in Figure 3.2-2. Long-term, beneficial cumulative impacts on land use would result from efficient use of installation land that would not conflict with existing land uses. No significant cumulative land use impacts are anticipated.

No Action Alternative

The proposed projects would not be constructed and therefore would not contribute to cumulative effects to land use.

4.14.2 Noise

Proposed Action/Alternatives

Short-term, minor, adverse, cumulative impacts would occur from noise generated from all planned construction, demolition, maintenance, and repair activities on Fairchild AFB, in addition to long-term impacts from aircraft noise, including noise associated with new KC-135 refueling aircraft. Multiple noise-generating activities occurring at the same time and in the same vicinity could have short-term, minor, adverse cumulative effects on the local noise environment, as considered in the noise analysis presented in Section 4.3.1. Other planned projects could also occur during the same time frame and in the same general vicinity on Fairchild AFB as one or more proposed projects. However, it is expected that cumulative noise impacts from all planned projects on Fairchild AFB would not be substantially greater than those reported in Section 4.3.1. Noise generated by the proposed projects at the installation would last only for the duration of construction, demolition, maintenance, and repair activities and would be minimized through measures such as restricting these activities to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and using equipment with exhaust mufflers. Off-installation actions are far enough away from the installation that cumulative noise impacts from construction would not be a concern. From a regional perspective, planned development at Fairchild AFB and associated population increases, in addition to other planned projects in the West Plains area and other development and growth in the surrounding communities, could lead to cumulative increases in noise associated with more vehicle use on roads. While baseline noise levels could increase as a result of new facilities and associated commuters cumulative noise impacts associated with increased traffic would not be significant.

No Action Alternative

The proposed projects would not be constructed and therefore would not contribute to cumulative noise effects in the ROI.

4.14.3 Air Quality

Proposed Actions/Alternatives

The State of Washington takes into account the impacts of all past, present, and reasonably foreseeable future emissions during the development of the State Implementation Plan. The state accounts for all

significant stationary, area, and mobile emission sources in the development of this plan. Emissions generated by the proposed projects would be completely within an attainment area, and activities of this size and short-term nature would not contribute significantly to adverse cumulative impacts on air quality. Cumulatively, the facility construction, demolition, maintenance, and repair activities associated with the proposed projects and other planned development projects within the ROI, in addition to vehicle emissions from all construction-related traffic, would result in short-term, intermittent increases in air pollutant levels during construction. Given the size of the individual planned projects and the short-term nature of construction, significant effects to air quality are not anticipated, even when considered cumulatively. Within the region, planned development at Fairchild AFB, in addition to other development and growth in the surrounding communities and associated population increases, would result in cumulative increases in vehicle emissions associated with more vehicle use on roads. However, significant cumulative air impacts are not anticipated.

No Action Alternative

The proposed projects would not be constructed and would not contribute to cumulative air quality impacts within the ROI.

4.14.4 Water Resources

Proposed Action/Alternatives

Groundwater

The proposed projects, as well as other planned actions listed in Table 4.14-1, could result in accidental spills or leaks of substances such as fuels, oils, and other materials that could contaminate groundwater and shallow aquifers beneath Fairchild AFB and other areas in the ROI, but would be minimized by following equipment maintenance standards, use of secondary containment for temporary storage of hazardous materials, and other project-specific BMPs. Implementation of the proposed projects and other planned actions on Fairchild AFB would cumulatively increase the total amount of impervious surface within the installation. Runoff from these areas would infiltrate within the installation (runoff from projects in Basins 5 and 8) or at discharge points outside the installation boundary (runoff from projects in Basins 1, 6, and 7). There would be no substantial overall regional reduction in groundwater recharge as a result of the proposed projects and other actions occurring at the installation and the contribution to cumulative effects on groundwater quantity would be negligible. Outside of Fairchild AFB, planned new developments in the West Plains area would add new impervious surface within the region, but the cumulative impacts of these actions would be minimized through city and county regulations requiring new developments to include stormwater systems that adequately infiltrate runoff. Since the proposed Installation Development projects would not result in population increases, they would not contribute to cumulative impacts to water use and associated aquifer depletion in the region. Actions on and off the installation would be subject to a variety of stormwater regulations, including requirements for SWPPPs, Erosion and Sediment Control Plans, and BMPs that would protect groundwater resources. Significant cumulative impacts to groundwater within the ROI are not anticipated.

There would be no substantial overall regional reduction in groundwater recharge as a result of the proposed projects and other actions occurring at the installation, although other actions in the region that are impacting the West Plains aquifer would likely continue

Surface Water

Short- and long-term, minor, adverse, cumulative impacts on surface water could occur from the proposed projects and other actions at the installation involving ground disturbance and increased impervious surfaces. Soil disturbance at the installation association with the proposed projects and other planned actions could result in erosion, sedimentation into local surface water conveyances, and the potential for

associated water quality degradation. However, these risks would be minimized by conducting all ground-disturbing activities at the installation in accordance with the applicable stormwater discharge permit to control erosion and prevent sediment, debris, or other pollutants from entering the stormwater system, and by following a SWPPP. Project design for new impervious developments would include stormwater features, as needed, to incorporate runoff from the new areas into the installation's stormwater system and to maintain or restore predevelopment site hydrology to the maximum extent practicable. With these measures in place, no significant cumulative impacts to surface water would occur.

Wetlands

The wetlands on Fairchild AFB have been degraded by past land uses, which have led to their current conditions as described in Section 3.5.2. Most proposed projects and other planned actions at the installation would not affect wetlands or wetland buffers. Project MD02 would temporarily impact wetlands and wetland buffers, but no permanent loss of wetlands is anticipated from proposed projects or other actions planned at the installation. High-quality wetlands on Fairchild AFB would not be adversely impacted. All planned projects on Fairchild AFB would be subject to federal, state, and local regulations requiring avoidance and minimization of wetland impacts and mitigation for any wetland impacts that are unavoidable. Therefore, no significant impacts to wetlands are anticipated.

No Action Alternative

Under the No Action Alternative, no facility construction, demolition, or renovation activities would occur and there would be no associated interaction with groundwater, surface water, or wetlands at the installation. Therefore, there would be no contribution to cumulative impacts.

4.14.5 Safety and Occupational Health

Proposed Action/Alternatives

Short-term, negligible, adverse cumulative impacts on health and safety (e.g., slips, falls, heat exposure, exposure to mechanical, electrical, vision, chemical hazards) could occur from construction, demolition, maintenance, and repair activities associated with the proposed projects and other planned actions occurring at the installation. Construction workers could also encounter soil or groundwater contamination as a result of an ERP site or previously unknown soil or groundwater contamination. However, implementation of appropriate safety methods, such as wearing PPE, during these activities would minimize the potential for such impacts. For all planned projects occurring within the ESQD arcs and UXO probability areas, safety risks would be minimized through coordination with the installation Safety Office. With these protocols in place, health and safety risks from all planned projects, even when considered cumulatively, would be reduced to acceptable levels. The removal of ACM, LBP, and PCB-contaminated materials, and other planned actions that improve safety would result in a long-term, beneficial impact on safety and occupational health for personnel and residents at Fairchild AFB, which would offset some health and safety risks associated with past and present actions on the installation. Therefore, no significant cumulative impacts to safety and occupational health are anticipated.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative health and safety risks on Fairchild AFB. However, projects being implemented to improve mission safety would also not occur, and would not help offset cumulative adverse impacts.

4.14.6 Hazardous Materials and Wastes

Proposed Action/Alternatives

Short-term, minor, adverse impacts associated with the use of hazardous materials and the generation of hazardous wastes would be expected during implementation of the proposed projects and other planned actions at the installation. Even when considered cumulatively, it is anticipated that the quantity of hazardous materials used during construction and demolition activities would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous wastes, which would be handled in accordance with federal, state, and USAF regulations. Contractors would be required to use environmental protection measures to prevent hazardous materials releases and ensure that any releases do not result in soil or groundwater contamination, and would follow appropriate procedures for handling, storage, transportation, and disposal of hazardous substances in accordance with applicable federal, state, and local regulations. With these protocols in place, risks for release of hazardous materials and wastes and subsequent environmental contamination would be minimized. The removal of ACM, LBP, and PCB-contaminated materials and USTs and OWSs during implementation of the proposed projects and other actions at Fairchild AFB would have a minor long-term, cumulative, beneficial effect by reducing the quantity of these materials on the installation. The proposed projects (including preferred and non-preferred alternatives) would be designed and constructed to avoid disturbance or interference with cleanup actions at CERCLA sites and to avoid impacts to monitoring wells associated with CERCLA sites. Therefore, there would be no contribution to cumulative effects to these sites. Discoveries of petroleum-contaminated soil or groundwater during demolition and construction would be additive to discoveries associated with other construction and digging projects on the installation. In all cases, the contaminated materials would be handled following the appropriate safety and disposal protocols and cumulative effects would not be significant. Overall, no significant cumulative impacts to hazardous materials and wastes are anticipated.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative effects pertaining to hazardous materials and wastes.

4.14.7 Biological Resources

Proposed Action/Alternatives

Vegetation

Short- and long-term, minor, adverse cumulative impacts would occur to vegetation and associated habitats from facility construction and demolition associated with the proposed projects and other planned actions on Fairchild AFB. Up to 15.2 acres of permanent impacts and 1 acre of temporary impacts to vegetation from the proposed project would be cumulative to those associated with other actions on Fairchild AFB. For most of the planned projects on the installation, project size and location has not been considered yet, so the cumulative area of vegetation impacted cannot be quantified. However, based on the vegetation that is currently present on the installation, and considering ongoing management to preserve high-quality vegetation communities, the cumulative long-term loss would be of predominantly common plant species in disturbed habitats. For projects that do not result in new structures or paving, restoration of disturbed areas would result in only short-term impacts to vegetation. Significant cumulative impacts to vegetation would not occur.

Wildlife

Noise associated with proposed projects and other planned actions would generally have minor, short-term cumulative impacts to wildlife from disturbance during construction and demolition, and would be

greatest for simultaneous construction projects occurring in the same general vicinity. Mortality of small, less-mobile species (e.g., reptiles and small mammals) could occur as a result of collisions with heavy equipment. When effects from all planned projects are considered cumulatively, it is not expected that there would be long-term substantial reductions in species populations, given that most development would occur in areas that have already been disturbed and where wildlife habitat is marginal. In some areas, increased presence of humans and vehicles during operation of new facilities would have long-term impacts if wildlife begin to avoid these areas. Projects that change traffic patterns on Fairchild AFB could result in a long-term increased risk of mortality in certain areas. When all planned projects are considered together, long-term cumulative impacts would include a reduction in the total amount of wildlife habitat on the installation, although most of the affected areas currently contain low-quality habitat for common species. The importance of protected areas on the installation, such as the wildlife management area and the Spalding's catchfly area, would increase in terms of wildlife habitat provided. Planned development projects would avoid these areas. Significant cumulative impacts to wildlife would not occur.

Protected and Sensitive Species

Measures to avoid impacts to protected and sensitive species would be implemented as necessary. There would be a long-term cumulative reduction in wildlife habitat on Fairchild AFB that might be used by protected or sensitive species, although projects would generally occur in the more developed areas of the installation and would avoid sensitive and high-quality habitats. With measures in place to protect important habitats for sensitive and protected species and to avoid impacts to these species during project construction, significant cumulative impacts would not occur.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative impacts to biological resources.

4.14.8 Cultural Resources Impacts

Proposed Action/Alternatives

Damage to the nature, integrity, and spatial context of cultural resources can have a cumulative impact if the initial act is compounded by other similar losses or impacts. The alteration or damage to historic properties may incrementally impact cultural resources in the region.

No impacts to cultural resources are anticipated from the proposed projects. Past actions at the installation have been conducted in accordance with Section 106 of the NHPA to mitigate adverse effects. Any present and/or future actions at the installation also require implementation and completion of the Section 106 process. Future actions that involve historic properties at Fairchild AFB include: repairing the hangar bay at Building 2050; repairing the electrical distribution system at Building 2050; renovating the Aerospace Ground Equipment wash rack at Building 2050; repairing the exterior and roof at Building 2050; cleaning and painting the exterior of Building 2025; and repairs to administrative/customer function of Building 2245.

If adverse effects to cultural resources are anticipated from these proposed projects, or other actions, adherence to the NHPA Section 106 process, the regulations set forth at 36 CFR 800, procedures in AFI 32-7605, and standard operating procedures in the Fairchild AFB Integrated Cultural Resources Management Plan would be followed to mitigate these impacts. Similarly, if adverse effects are anticipated to occur to resources outside of Fairchild AFB, and the project is considered a federal undertaking, compliance with the Section 106 process in the NHPA would also be required, with the procedures codified at 36 CFR 800 to mitigate adverse impacts. If the Section 106 process is followed during the implementation of individual projects, any effects would be resolved and, as a result, no adverse effects to cultural resources would be anticipated. As there are no identified impacts to cultural

resources from the proposed projects, and by adhering to the Section 106 process for other actions, no cumulative impacts would be expected for cultural resources. Significant cumulative impacts would not occur.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative impacts to cultural resources.

4.14.9 Earth Resources

Proposed Action/Alternatives

The proposed projects and other planned projects on Fairchild AFB would result in temporarily disturbed ground surfaces at construction sites and associated short- and long-term, minor, cumulative impacts from soil compaction, disturbance, and erosion caused by earth moving and other construction activities. Renovation or repair projects would have no to negligible impacts on earth resources because associated activities would involve minimal ground disturbance. Impacts to soil would not exceed individual project boundaries and would be minimized through the use of BMPs, erosion and sediment controls, and other measures. New structures and pavements would result in a long-term loss of soil function and productivity over the combined footprint area for all planned projects. These losses would largely occur in areas on Fairchild AFB that are already developed, all though some undeveloped areas would be converted to other uses. These losses would not be considered significant in the context of past disturbance and soil alteration on Fairchild AFB. Site-specific soil testing would be conducted to determine whether soil limitations exist at proposed building sites, and to identify appropriate environmental protection measures to be implemented to minimize adverse impacts.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative impacts to earth resources.

4.14.10 Socioeconomics and Environmental Justice

Proposed Action/Alternatives

Cumulatively, the proposed projects and other planned actions in the ROI would have short-term, minor to moderate, beneficial effects through the increased demand for construction workers and the procurement of goods and services. Construction-related expenditures would not be expected to generate long-term cumulative socioeconomic benefits. Because the proposed projects would not result in an increase in the installation or regional population, they would not contribute to cumulative demographic impacts in the region. However, the new population associated with the addition of 12KC-135 aerial refueling aircraft would use many of the new facilities. Planned developments in the West Plains region outside of Fairchild AFB would likely result in long-term population increases in the ROI, as well as long-term economic benefits through the creation of a substantial number of new jobs.

Because the proposed projects would not result in disproportionately high and adverse impacts on environmental justice populations, they would not contribute to cumulative environmental justice impacts in the region.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative socioeconomic or environmental justice impacts.

4.14.11 Infrastructure

Proposed Action/Alternatives

The proposed projects would cause some localized short-term disruptions to utilities on Fairchild AFB, but as discussed in Section 4.12.1 would result in a negligible increase in consumption of utilities, with long-term beneficial impacts associated with construction of updated, more efficient facilities. When considered together all planned actions on the installation over the next 5 years would have short- and long-term impacts on utilities from increased consumption of electricity, water, and natural gas, and increased use of the sanitary sewer system, stormwater drainage system, communications system, and solid waste services during the construction and operations time frames. When the increased demands of all of these actions are considered together, it is anticipated that the existing utilities would have sufficient capacity to accommodate the projected increases. However, given the cumulative increase in impervious surface on Fairchild associated with all planned projects, increased amounts of stormwater runoff would occur, and modifications/upgrades to the stormwater system would likely be necessary. The proposed projects would not contribute to increased demand of liquid fuel, but would help improve the efficiency of refueling operations by additional KC-135 aircraft.

Short- and long-term, negligible to minor adverse impacts on the transportation system would occur during implementation of the proposed projects and other future planned actions that would occur on the installation. These actions would include the delivery of materials to and removal of construction and demolition debris from the project sites. Construction-related traffic would result in a small increase to the current traffic volume, and would be cumulative for multiple projects occurring at the same time, but would be short-term in duration. Intermittent traffic delays and temporary road closures associated with the proposed projects would be cumulative to those associated with other actions on the installation, and could be exacerbated by overall increased traffic volumes associated with the stationing of KC-135s. These impacts would not be significant, as they could by minimized by scheduling truck deliveries outside the peak inbound traffic times. Additionally, heavy construction equipment would be driven to the work sites and kept on the installation for the duration of construction activities.

Depending on the number of the 370 new personnel (and their dependents) associated with the 12 KC-135 aircraft that reside off the installation, there would be increased congestion and queuing to enter and exit the Fairchild AFB, particularly during peak travel times. Proposed Project M01 (Add/Alter Thorpe and Rambo Road Gate) would help lessen these impacts by providing a second full-use gate. Overall, cumulative impacts would not be significant, as projected levels of vehicle traffic at Fairchild AFB would not be substantially different from past levels.

Likely traffic increases associated with large proposed future development projects and associated populations increases would likely result in increased traffic volumes in the ROI. These increases would likely be offset to some degree by actions to improve traffic flow and planning to accommodate projected population increased. Proposed transportation improvements off the installation, such as the multiuse pathway along the southern edge of U.S. 2 between Hayford Road and Deer Heights Road, the modifications at the West Plains Transit Center at I-90 and State Route 902, and reconstruction of the I-90 interchanges for Medical Lake and Geiger Field would provide additional long-term transportation benefits within the ROI which would help offset traffic increases associated with regional population increases.

No Action Alternative

Under the No Action Alternative, the proposed projects would not occur and there would be no associated contribution to cumulative construction-related impacts to infrastructure, or to installation-wide increases in energy efficiency associated with the projects. Because the Thorpe-Rambo Gate would not be built, there would likely be a larger cumulative impact on traffic near Fairchild AFB from population increases than under the Proposed Action. These cumulative impacts would not be significant.

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5.0 LIST OF PREPARERS

This EA has been prepared under the direction of the Air Force Civil Engineer Center, USAF, 92 ARW at Fairchild AFB, and HQ AMC. The individuals that contributed to the preparation of this EA are listed in Table 5-1.

Table 5-1: List of Preparers

Name/Organization	Education	Resource Area	Years of Experience
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Seth Bergeson/AECOM	Graduate Certificate, GIS B.S. Geography	GIS Analysis and figures	21
JD Brooks/AECOM	M.S. Biology B.S. Field Biology, Ecology, and Organismal Biology	Biological Resources; Socioeconomics	4
Ned Gaines/Brice	M.S. Anthropology B.S. Anthropology	Cultural Resources	19
Linda Howard/AECOM	B.S. Environmental Science and Conservation Biology	Safety and Occupational Health; Hazardous Materials/Waste	14
Robin Lium/AECOM	M.S. Wildlife Conservation and Habitat Management B.A. Biology	GIS Analysis and figures	11
Roger Wayson/AECOM	Ph.D. Civil Engineering M.S. Environmental Engineering B.E.S. Environmental Engineering	Noise; Air Quality	44

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6.0 PERSONS AND AGENCIES CONSULTED/COORDINATED

Table 6-1 lists the Persons and Agencies contacted during preparation of this EA.

Table 6-1: Persons and Agencies Consulted/Coordinated

Federal Agencies	
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Table 6-1: Persons and Agencies Consulted/Coordinated

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Mr. Ernie Stensgar Chairman Coeur d'Alene Tribe P.O. Box 408 Plummer, ID 83851	Mr. Rodney Cawston Chairman Confederated Tribes of the Colville Reservation P.O. Box 150 21 Colville Street Nespelem, WA 99155
Mr. Glen Nenema Chairman Kalispel Tribe of Indians 1981 LeClerc Road N Cusick, WA 99119	Ms. Carol Evans Chairwoman Spokane Tribe of Indians P.O. Box 100 Wellpinit, WA 99040

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APPENDIX A

Interagency/Intergovernmental Coordination and Public Participation

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Native American Tribal Consultation

The USAF is consulting with the Coeur d'Alene Tribe, Confederated Tribes of the Colville Reservation, Kalispel Tribe of Indians, and Spokane Tribe of Indians regarding the Proposed Action. The list of addresses contacted for the Native American Tribal consultation is provided below, followed by copies of the letters that were sent to these Native American tribes.

Tribal Contacts

Mr. Ernie Stensgar
Chairman
Coeur d'Alene Tribes
P.O. Box 408
Plummer, ID 83851

Mr. Rodney Cawston
Chairman
Confederated Tribes of the Colville Reservation
P.O. Box 150
21 Colville Street
Nespelem, WA 99155

Mr. Glen Nenema
Chairman
Kalispel Tribe of Indians
1981 LeClerc Road N
Cusick, WA 99119

Ms. Carol Evans
Chairwoman
Spokane Tribe of Indians
P.O. Box 100
Wellpinit, WA 99040

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Mr. Ernie Stensgar
Chairman
Coeur d'Alene Tribe
P.O. Box 408
Plummer ID 83851

Dear Chairman Stensgar

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing proposed development projects on Fairchild Air Force Base during the next three to five years, depending on funding availability. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. The Air Force has defined the APE for direct effects to historic properties as the specific footprint impacted by the distinct projects located in the main base area. The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active Air Force base, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

Based on the results of previously completed cultural resource inventories and consultations, the Air Force is unaware of any archaeological resources or properties of traditional cultural or religious significance within the APE. Proposed ground disturbance areas are within the developed airfield and cantonment area, and it is unlikely that unidentified archaeological sites are present within project footprints. As such, Fairchild AFB has determined the Undertaking

would have no effect on archaeological historic properties or properties of traditional cultural or religious significance.

We request your review of the attached materials and your comments regarding the identification of historic properties and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. My point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116, if you have any questions.

Sincerely

RONALD R. DANIELS
Deputy Base Civil Engineer

Attachments:
1. Draft Environmental Assessment for Installation Development at Fairchild Air Force Base
2. Area of Potential Effect and Identified Historic Properties

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Mr. Rodney Cawston
Chairman
Confederated Tribes of the Colville Reservation
P.O. Box 150
21 Colville Street
Nespelem WA 99155

Dear Mr. Cawston

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing proposed development projects on Fairchild Air Force Base during the next three to five years, depending on funding availability. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

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Sincerely

RONALD R. DANIELS
Deputy Base Civil Engineer

Attachments:
1. Draft Environmental Assessment for Installation Development at Fairchild Air Force Base
2. Area of Potential Effect and Identified Historic Properties

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Mr. Glen Nenema
Chairman
Kalispel Tribe of Indians
1981 LeClerc Road N
Cusick, WA 99119

Dear Chairman Nenema

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing proposed development projects on Fairchild Air Force Base during the next three to five years, depending on funding availability. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

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We request your review of the attached materials and your comments regarding the identification of historic properties and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. My point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116, if you have any questions.

Sincerely

RONALD R. DANIELS
Deputy Base Civil Engineer

Attachments:
1. Draft Environmental Assessment for Installation Development at Fairchild Air Force Base
2. Area of Potential Effect and Identified Historic Properties

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Ms. Carol Evans
Chairwoman
Spokane Tribe of Indians
P.O. Box 100
Wellpinit WA 99040

Dear Chairwoman Evans

The United States Air Force (Air Force) has prepared a Draft Environmental Assessment (EA) addressing proposed development projects on Fairchild Air Force Base during the next three to five years, depending on funding availability. The Draft EA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. On behalf of Mr. Jeff Johnson, Installation Tribal Liaison Officer (ITLO), I respectfully invite you to participate in government-to-government consultation to exchange information, ask questions, and advise Fairchild AFB of any concerns or suggestions you may have with this proposal. We also invite your participation in consultation under Section 106 of the National Historic Preservation Act to ensure concerns you might have are addressed.

As described in the Draft EA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. The Air Force has defined the APE for direct effects to historic properties as the specific footprint impacted by the distinct projects located in the main base area. The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active Air Force base, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

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We request your review of the attached materials and your comments regarding the identification of historic properties and the assessment of effects in the Draft EA. Although you may provide comments at any time, we request your response within 30 days of receiving this letter so that we can address your concerns in the Final EA. My point of contact for this consultation is Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, shawn.woodard.1@us.af.mil, 509-247-8116, if you have any questions.

Sincerely

RONALD R. DANIELS
Deputy Base Civil Engineer

Attachments:
1. Draft Environmental Assessment for Installation Development at Fairchild Air Force Base
2. Area of Potential Effect and Identified Historic Properties

Stakeholder Distribution List

The USAF distributed the Draft EA and Draft Finding of No Significant Impact (FONSI) for the Proposed Action to relevant federal, state, and local government agencies for a 30-day review period on 4 March 2020. The list of federal, state, and local government agencies contacted as part of this distribution is below, followed by the distribution memorandum that the USAF sent to these agencies. Included on this list are the Washington State Historic Preservation Officer (SHPO) and the U.S. Fish and Wildlife Service. Consultation with these agencies will occur on a per-project basis, as needed, when the project design has advanced to a stage to adequately account for potential effects. For projects that involve potential impacts to the installation's National Register of Historic Places (NRHP)-eligible historic properties—Buildings 2025, 2245, and 2050—consultation with the SHPO will occur when project is at the 25 to 33 percent design stage.

Federal Agency Contacts

Mr. David Suomi
Regional Administrator
Federal Aviation Administration
Northwest Mountain Region
1601 Lind Avenue Southwest
Renton, WA 98057

Ms. Jill Nogi
NEPA Manager
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Mr. Russ MacRae
Field Supervisor
U.S. Fish and Wildlife Service
Eastern Washington Field Office
11103 East Montgomery Drive
Spokane, WA 99206

State Agency Contacts

Ms. Brook Beeler
Director
Washington Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205-1295

Mr. Steve Pozzanghera
Regional Director
Washington Department of Fish and Wildlife, Region 1
2315 North Discovery Place
Spokane Valley, WA 99216-1566

Dr. Allyson Brooks
State Historic Preservation Officer
Washington Department of Archaeology & Historic Preservation
P.O. Box 48343
Olympia, WA 98504-8343

Local Agency Contacts

Mr. John Pederson
Planning Director
Spokane County Building & Planning
1026 West Broadway Avenue
Spokane, WA 99260

Ms. Heather Trautmann
Development Services Director
City of Airway Heights: Planning Department
1208 S. Lundstrom Street
Airway Heights, WA 99001

Ms. Kris Becker
Development Services Director
City of Spokane: Planning and Development
808 W. Spokane Falls Boulevard
Spokane, WA 99201

Mr. Louis Meuler
Acting Planning Director
City of Spokane: Planning and Development
808 W. Spokane Falls Boulevard
Spokane, WA 99201

Mr. Timothy Ames
Superintendent
Medical Lake School District
P.O. Box 128
Medical Lake, WA 99022

Mr. Matt Breen
Planning & Engineering
Spokane International Airport
9000 West Airport Drive, Suite 204
Spokane, WA 99224

Mr. Joe Southwell
Air Quality Engineer
Spokane Regional Clean Air Agency
3104 E. Augusta Avenue
Spokane, WA 99207

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

MEMORANDUM FOR DISTRIBUTION

FROM: 92 CES/CD
100 W. Ent Street, Suite 155
Fairchild AFB WA 99011

SUBJECT: Distribution of Draft Environmental Assessment for Installation Development at Fairchild Air Force Base, Washington

1. The U.S. Air Force (USAF) has prepared a Draft Environmental Assessment (EA) addressing proposed development projects on Fairchild Air Force Base during the next three to five years, depending on funding availability. The purpose of the proposed installation development projects is to provide infrastructure and functionality improvements necessary to support the mission of the 92nd Air Refueling Wing and tenant units on Fairchild Air Force Base. The Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs.

2. The Draft EA was prepared in accordance with the National Environmental Policy Act. The analysis contained within the Draft EA indicates that no significant impacts would occur from the Proposed Action at Fairchild AFB.

3. In accordance with Executive Order (EO) 12372, Intergovernmental Review of Federal Programs, as amended by EO 12416 with the same title, we request your participation and comments on the Draft EA and Draft Finding of No Significant Impact (FONSI). Your comments will be considered in the development of the Final EA and USAF's decision on whether or not to sign the FONSI and proceed with the Proposed Action.

4. Please provide comments on the Draft EA and Draft FONSI no later than 30 days from date of this correspondence. Comments are encouraged to be sent by email to 92arw.pa@us.af.mil but you can also mail them to 92 ARW Public Affairs, 1 East Bong Street, Suite 228, Fairchild AFB, WA 99011. The telephone number is (509) 247-5705. Thank you in advance.

RONALD R. DANIELS, GS-14, DAF
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for Installation Development at Fairchild AFB

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

MEMORANDUM FOR U.S. Fish and Wildlife Service
Mr. Russ MacRae, Field Supervisor
Eastern Washington Field Office
11103 East Montgomery Drive
Spokane, WA 99206

FROM: 92 CES/CD
100 W. Ent Street
Fairchild AFB WA 99011

SUBJECT: Analysis of Effects on Threatened, Endangered, and Proposed Species from Multiple Projects Associated with Installation Development on Fairchild Air Force Base (AFB), Washington

1. The U.S. Air Force (USAF) has prepared a Draft Environmental Assessment (EA) addressing proposed development projects on Fairchild Air Force Base during the next three to five years, depending on funding availability. The Draft EA was prepared in accordance with the National Environmental Policy Act. This letter requests your concurrence that the project would not affect listed species and designated critical habitat under U.S. Fish and Wildlife Service (USFWS) jurisdiction at Fairchild AFB, in accordance with Section 7(a) of the Endangered Species Act (ESA) (50 CFR 402.13).

2. As described in the Draft EA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs.

3. To comply with Section 7(a)(2) of the ESA, the Draft EA evaluates potential impacts on threatened and endangered species that may occur in the region surrounding Fairchild AFB. Based on the Draft EA, the USAF has determined that the Proposed Action would have no effect on current or proposed threatened and endangered species, including the Spalding's catchfly (*Silene spaldingii*). These species do not occur within an action area for the construction, demolition, and renovation described in the EA.

4. To support our administrative record for this project, we seek your concurrence on the finding of no effect for threatened and endangered species. If you require additional information, please contact Mr. Shawn Woodard, 92 CES/CEIE at (509) 247-8116. Thank you in advance.

RONALD R. DANIELS
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for Installation Development at Fairchild Air Force Base

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

Ronald R. Daniels
Deputy Base Civil Engineer
100 W. Ent Street
Fairchild AFB WA 99011

Dr. Allyson Brooks
State Historic Preservation Officer
Department of Archaeology and Historic Preservation
P.O. Box 48343
Olympia WA 98504-8343

Dear Dr. Brooks

The United States Air Force (Air Force) has prepared a Draft Installation Development Environmental Assessment (IDEA) addressing proposed development projects on Fairchild Air Force Base during the next three to five years, depending on funding availability. The Draft IDEA, included as Attachment 1, was prepared in accordance with the National Environmental Policy Act. This proposal is an Undertaking subject to Section 106 of the National Historic Preservation Act. Pursuant to 36 Code of Federal Regulations § 800.3, this letter initiates Section 106 consultation for this Undertaking at Fairchild AFB. We have also initiated consultation with local Tribes and provided them a copy of the Draft IDEA.

As described in the Draft IDEA, the Proposed Action consists of projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general the individual projects are needed to address deficiencies of function and capability in the facilities and infrastructure that result from obsolescence, deterioration, and evolving mission needs. The Air Force has defined the APE for direct effects to historic properties as the specific footprint impacted by the distinct projects located in the main base area. The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of an active Air Force base, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

Buildings 2025, 2045 and 2050 are the only structures at Fairchild AFB eligible for listing on the NRHP. Buildings 2025 and 2045 are within the direct effects APE for one of the proposed projects which entails demolishing Underground Storage Tanks (UST) and underground Oil Water Separators (OWS) at each building. Currently, the USTs and OWSs are abandoned and no longer functional or in use. They are buried outside each building's structural footprint. As such, they are not currently visible, nor were they visible during the period of historical significance. Accordingly, the USTs and OWSs are not elements that contribute to the characteristics that

make either building eligible for listing on the NRHP. Their loss would not impact the buildings' integrity of significant historic features, change the character of the properties' use or physical features that contribute to historic significance, or alter either building's setting, or ability to convey feeling or sense of historic importance. The demolition of the USTs and OWSs would not "diminish the integrity of the properties' significant historic features (36 CFR § 800.5(a)(2)(v))." Indirect effects to either of these buildings or Building 2050—which is in the indirect effects APE—from proposed projects would be temporary, and would not affect integrity or characteristics that make the buildings eligible for inclusion on the NRHP. Land use setting would remain consistent with the buildings' intended uses on a military facility. Thus, there would be no significant direct or indirect impacts or adverse effects to Buildings 2025, 2045, and 2050 from the implementation of proposed projects detailed within the IDEA.

We request your review of the attached draft IDEA and your concurrence with our finding of *no adverse effect* on historic properties. Please contact Mr. Shawn Woodard, Cultural/Natural Resources Manager, 92 CES/CEIE, at shawn.woodard.1@us.af.mil or 509-247-8116 if you have any questions.

Sincerely

RONALD R. DANIELS, GS-14, DAFC
Deputy Base Civil Engineer

Attachments:
1. Draft Environmental Assessment for Installation Development at Fairchild Air Force Base
2. Area of Potential Effect and Identified Historic Properties

APPENDIX B

Notice of Availability

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PUBLIC NOTICE

NOTICE OF AVAILABILITY

DRAFT ENVIRONMENTAL ASSESSMENT AND

PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR INSTALLATION DEVELOPMENT AT FAIRCHILD AIR FORCE BASE (AFB), WASHINGTON

An Environmental Assessment (EA) has been prepared to analyze the impacts of the implementing 13 planned installation development projects at Fairchild AFB. The purpose of the projects is to provide infrastructure and functionality improvements necessary to support the mission of the 92nd Air Refueling Wing and tenant units at Fairchild AFB. The proposed projects include construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the alternative actions on the environment, including the No Action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI).

The Draft EA and proposed FONSI, dated March 2020, are available for review at the following locations:

Airway Heights Library 1213 S. Lundstrom St. Airway Heights, WA 99001 (509) 893-8250	Spokane Public Library 906 W. Main Ave. Spokane, WA 99201 (509) 444-5300
Fairchild AFB Library 2 W. Castle St. Fairchild AFB, WA 99011 509-247-5556	

Electronic copies of the documents can also be found on the Fairchild AFB website at http://www.fairchild.af.mil/about/fact-sheets/.

You are encouraged to submit comments through 3 April 2020. Comments should be provided to 92 ARW Public Affairs, 1 East Bong Street, Suite 28, Fairchild AFB, WA 99011, or by email to 92arw.pa@us.af.mil.

PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et seq. All written comments received during the comment period will be made available to the public and considered during the final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.

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APPENDIX C

Air Conformity Applicability Model Results

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DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Demolition

1. General Information

—Action Location
Base: FAIRCHILD AFB
State: Washington
County(s): Spokane
Regulatory Area(s): Spokane Co, WA; Spokane, WA

—Action Title: Demolish Fuel Cell Hangar, Building 1012

—Project Number/s (if applicable): OM06

—Projected Action Start Date: 1/2021

—Action Purpose and Need:
Provide infrastructure and 19 functionality improvements necessary to support the mission of the 92 ARW and tenant units.

—Action Description:
Demolish an existing structure (fuel cell hangar) and remove pavement.

—Point of Contact
Name: Roger Wayson
Title: Civilian
Organization: AECOM
Email: roger.wayson@aecom.com
Phone Number: 830 265-7687

—Activity List:

Activity Type		Activity Title
2.	Construction/Demolition	Demolish Building 1012

Emission factors and air emission estimating methods come from the USAF's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction/Demolition

2.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Spokane Co, WA; Spokane, WA

—Activity Title: Demolish Building 1012

—Activity Description:
Demolish an existing structure (fuel cell hangar) and remove pavement.

—Activity Start Date
Start Month: 1
Start Month: 2021

—Activity End Date
Indefinite: False
End Month: 12
End Month: 2023

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.553475
SO_x	0.009186
NO_x	3.882565
CO	3.305504
PM 10	8.767027

Pollutant	Total Emissions (TONs)
PM 2.5	0.156513
Pb	0.000000
NH_3	0.006012
CO_2e	942.8

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 12
Number of Days: 0

2.1.2 Demolition Phase Assumptions

—General Demolition Information
Area of Building to be demolished (ft^2): 25000
Height of Building to be demolished (ft): 48

—Default Settings Used: Yes

—Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0443	0.0006	0.3176	0.3761	0.0170	0.0170	0.0040	58.563
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.1.4 Demolition Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

Appendices

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (1/27) * 0.25 * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 12
Number of Days: 0

2.2.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 70000
Amount of Material to be Hauled On-Site (yd^3): 70000
Amount of Material to be Hauled Off-Site (yd^3): 70000

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.2.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Trenching/Excavating Phase

2.3.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 12
Number of Days: 0

2.3.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 0
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 0

—Trenching Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

Appendices

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
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MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.3.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Appendices

—Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
Construction

1. General Information

—Action Location
Base: FAIRCHILD AFB
State: Washington
County(s): Spokane
Regulatory Area(s): Spokane Co, WA; Spokane, WA; NOT IN A REGULATORY AREA

—Action Title: Installation Development at Fairchild AFB: Construction of Water Survival Training Facility.

—Project Number/s (if applicable): Preferred Alternative: T02.

—Projected Action Start Date: 1/2021

—Action Purpose and Need:
Implementing installation development projects at Fairchild AFB will provide infrastructure and functionality improvements necessary to support the mission of the 92 ARW and tenant units. The Water Survival Training facility is needed to support SERE Water Survival Training courses. The pool is shared with MWR is not of sufficient size to effectively perform the required training. There is also not adequate classroom space.

—Action Description:
The 92nd Air Refueling Wing (92 ARW) at Fairchild Air Force Base (AFB), Washington, and Headquarters Air Mobility Command (HQ AMC) have identified and programmed priorities for installation development projects and propose to implement them over the next three years (fiscal year [FY] 2020-FY 2023).

The information presented in this document will serve as the basis for deciding whether the proposed 24 actions would result in a significant impact to the human environment.

—Point of Contact
Name: Roger Wayson
Title: Civilian
Organization: AECOM
Email: roger.wayson@aecom.com
Phone Number: 830 265-7687

—Activity List:

Activity Type		Activity Title
2.	Construction/Demolition	Construction of water training survival facility

Emission factors and air emission estimating methods come from the USAF's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2.

Construction/Demolition

2.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Spokane Co, WA; Spokane, WA; NOT IN A REGULATORY AREA

—Activity Title: Construction of water training survival facility

—Activity Description:
This alternative would construct a two tank, 5,000-square 12 meter Water Survival Training Facility located on the SERE training campus.

—Activity Start Date
Start Month: 1
Start Month: 2021

—Activity End Date
Indefinite: False
End Month: 0
End Month: 2023

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.576456
SO_x	0.021203
NO_x	9.220584
CO	9.558436
PM 10	23.114269

Pollutant	Total Emissions (TONs)
PM 2.5	0.432513
Pb	0.000000
NH_3	0.005751
CO_2e	2079.4

2.1 Site Grading Phase

2.1.1 Site Grading Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 24
Number of Days: 0

2.1.2 Site Grading Phase Assumptions

—General Site Grading Information
Area of Site to be Graded (ft^2): 95000
Amount of Material to be Hauled On-Site (yd^3): 0
Amount of Material to be Hauled Off-Site (yd^3): 2000

—Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

Appendices

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Site Grading Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.1.4 Site Grading Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Building Construction Phase

2.2.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 24
Number of Days: 0

2.2.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 16400
Height of Building (ft): 36
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips

Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.2.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.2.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

Appendices

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Architectural Coatings Phase

2.3.1 Architectural Coatings Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 24
Number of Days: 0

2.3.2 Architectural Coatings Phase Assumptions

—General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 5000
Number of Units: N/A

—Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.3.3 Architectural Coatings Phase Emission Factor(s)

—Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.3.4 Architectural Coatings Phase Formula(s)

—Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA)/800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip/1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2/1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116)/2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area/total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.4 Paving Phase

2.4.1 Paving Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 24
Number of Days: 0

2.4.2 Paving Phase Assumptions

—General Paving Information
Paving Area (ft^2): 30000

—Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

—Vehicle Exhaust

Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.4.3 Paving Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0860	0.0014	0.5212	0.5747	0.0247	0.0247	0.0077	132.93
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0533	0.0012	0.3119	0.3497	0.0121	0.0121	0.0048	122.61
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2015	0.0024	1.4660	0.7661	0.0581	0.0581	0.0181	239.53
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.4.4 Paving Phase Formula(s)

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1/27) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1/27): Conversion Factor cubic feet to cubic yards (1 yd^3/27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

Appendices

—Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA)/43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2/acre)^2/acre)

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT
Renovation

1. General Information

—Action Location
Base: FAIRCHILD AFB
State: Washington
County(s): Spokane
Regulatory Area(s): Spokane Co, WA; Spokane, WA

—Action Title: Upgrade Intelligence Facility

—Project Number/s (if applicable): A01

—Projected Action Start Date: 1/2021

—Action Purpose and Need:
Provide infrastructure and 19 functionality improvements necessary to support the mission of the 92 ARW and tenant units.

—Action Description:
Add two new classified briefing rooms and three offices to house tactics office, mission planning area, and classified space, built to a Sensitive Compartmented Information (SCI) level of security.

—Point of Contact
Name: Roger Wayson
Title: Civilian
Organization: AECOM
Email: roger.wayson@aecom.com
Phone Number: 830 265-7687

—Activity List:

	Activity Type	Activity Title
2.	Construction/Demolition	Upgrade Intelligence Facility

Emission factors and air emission estimating methods come from the USAF's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction/Demolition

2.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Spokane Co, WA; Spokane, WA

—Activity Title: Upgrade Intelligence Facility

—Activity Description:
Add two new classified briefing rooms and three offices to house tactics office, mission planning area, and classified space, built to a SCI level of security.

—Activity Start Date
Start Month: 1
Start Month: 2021

—Activity End Date
Indefinite: False
End Month: 8
End Month: 2021

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.094226
SO_x	0.001614
NO_x	0.542578
CO	0.682936
PM 10	0.021744

Pollutant	Total Emissions (TONs)
PM 2.5	0.021719
Pb	0.000000
NH_3	0.000462
CO_2e	155.4

2.1 Building Construction Phase

2.1.1 Building Construction Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2021

—Phase Duration
Number of Month: 8
Number of Days: 0

2.1.2 Building Construction Phase Assumptions

—General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2200
Height of Building (ft): 12
Number of Units: N/A

—Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

—Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

—Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.1.3 Building Construction Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0845	0.0013	0.6033	0.3865	0.0228	0.0228	0.0076	128.82
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0293	0.0006	0.1458	0.2148	0.0056	0.0056	0.0026	54.462
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	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0407	0.0007	0.2505	0.3606	0.0112	0.0112	0.0036	66.890

Appendices

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.1.4 Building Construction Phase Formula(s)

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42/1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42/1000): Conversion Factor ft^3 to trips (0.42 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38/1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38/1000): Conversion Factor ft^3 to trips (0.38 trip/1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

Trenching

1. General Information

—Action Location

Base: FAIRCHILD AFB
State: Washington
County(s): Spokane
Regulatory Area(s): Spokane, WA; Spokane Co, WA

—Action Title: MSA and Pad 5 Drop Zone Electrical Underground

—Project Number/s (if applicable): MD02

—Projected Action Start Date: 1/2022

—Action Purpose and Need:

Provide infrastructure and 19 functionality improvements necessary to support the mission of the 92 ARW and tenant units.

—Action Description:

The utility lines must be run underground to be consistent with the rest of the base. Underground utility lines are required to increase resiliency of the power grind and ensure mission continuation in severe weather.

—Point of Contact

Name: Roger Wayson
Title: Civilian
Organization: AECOM
Email: roger.wayson@aecom.com
Phone Number: 830 265-7687

—Activity List:

Activity Type		Activity Title
2.	Construction/Demolition	Convert the MSA and Drop Zone overhead electrical system to an underground system

Emission factors and air emission estimating methods come from the USAF's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction/Demolition

2.1 General Information & Timeline Assumptions

—Activity Location
County: Spokane
Regulatory Area(s): Spokane, WA; Spokane Co, WA

—Activity Title: Convert the MSA and Drop Zone overhead electrical system to an underground system

—Activity Description:
Convert existing overhead electrical lines to an underground system to avoid interruptions caused by wind or other factors.

—Activity Start Date
Start Month: 1
Start Month: 2022

—Activity End Date
Indefinite: False
End Month: 8
End Month: 2022

—Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.275572
SO_x	0.004903
NO_x	1.563349
CO	2.121123
PM 10	0.250643

Pollutant	Total Emissions (TONs)
PM 2.5	0.065027
Pb	0.000000
NH_3	0.001022
CO_2e	469.6

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 8
Number of Days: 0

2.1.2 Demolition Phase Assumptions

—General Demolition Information
Area of Building to be demolished (ft^2): 2325
Height of Building to be demolished (ft): 1

—Default Settings Used: Yes

—Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

—Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0410	0.0006	0.2961	0.3743	0.0148	0.0148	0.0037	58.556
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1919	0.0024	1.3611	0.7352	0.0536	0.0536	0.0173	239.51
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0383	0.0007	0.2301	0.3598	0.0095	0.0095	0.0034	66.884

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.278	000.002	000.219	003.276	000.008	000.007		000.023	00320.329
LDGT	000.351	000.003	000.382	004.545	000.010	000.009		000.024	00414.211
HDGV	000.705	000.005	001.074	015.763	000.025	000.022		000.045	00763.488
LDDV	000.122	000.003	000.133	002.396	000.004	000.004		000.008	00309.634
LDDT	000.266	000.004	000.384	004.133	000.007	000.007		000.008	00440.653
HDDV	000.498	000.013	005.110	001.743	000.169	000.156		000.028	01479.227
MC	002.339	000.003	000.821	013.581	000.029	000.025		000.054	00399.711

2.1.4 Demolition Phase Formula(s)

—Fugitive Dust Emissions per Phase
$PM10_{FD} = (0.00042 * BA * BH)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1/27) * 0.25 * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1/27): Conversion Factor cubic feet to cubic yards ($1\ yd^3/27\ ft^3$)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Trenching/Excavating Phase

2.2.1 Trenching/Excavating Phase Timeline Assumptions

—Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2022

—Phase Duration
Number of Month: 8
Number of Days: 0

2.2.2 Trenching/Excavating Phase Assumptions

—General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 2325
Amount of Material to be Hauled On-Site (yd^3): 2000
Amount of Material to be Hauled Off-Site (yd^3): 2000

—Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

—Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipment Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

—Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

—Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

—Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

—Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Trenching/Excavating Phase Emission Factor(s)

—Construction Exhaust Emission Factors (lb/hour) (default)

—Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.541	000.007	000.605	004.970	000.014	000.013		000.034	00366.775
LDGT	000.730	000.010	001.051	007.932	000.016	000.014		000.034	00491.466
HDGV	001.333	000.015	003.076	026.359	000.041	000.036		000.045	00764.988
LDDV	000.257	000.003	000.316	003.374	000.007	000.006		000.008	00372.571
LDDT	000.574	000.005	000.856	006.977	000.009	000.008		000.008	00581.646
HDDV	000.839	000.014	009.019	002.812	000.375	000.345		000.029	01554.798
MC	002.423	000.008	000.845	015.088	000.029	000.026		000.050	00398.949

2.2.4 Trenching/Excavating Phase Formula(s)

—Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD)/2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb/1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

—Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL})/2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

—Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1/HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1/HC): Conversion Factor cubic yards to trips (1 trip/HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

—Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM)/2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

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