DEMOLITION OF MUNITIONS STORAGE AREA FACILITIES

"RIGHT SIZE" PROJECT 10-0192C

ENVIRONMENTAL ASSESSMENT

FAIRCHILD AIR FORCE BASE, WASHINGTON

JULY 2011

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FINDING OF NO SIGNIFICANT IMPACT (FONSI)

DEMOLITION OF SIX BUILDINGS IN THE MUNITIONS STORAGE AREA

FAIRCHILD AIR FORCE BASE, WASHINGTON

Federal actions that potentially involve significant impacts to the environment must be reviewed in accordance with the National Environmental Policy Act and all other applicable environmental laws. The U.S. Air Force has completed an Environmental Assessment (EA) of the potential environmental consequences associated with the maintenance of Installation infrastructure on Fairchild Air Force Base (AFB) in Spokane, Washington. This Finding of No Significant Impact (FONSI) incorporates the EA by reference and summarizes the results of the evaluation.

DESCRIPTION OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVE

Fairchild Air Force Base (AFB) proposes to demolish six facilities at Fairchild AFB located in the munitions storage area (MSA) on the south side of the Base with a total square footage of approximately 18,787. Demolition is proposed for Buildings 1457, 1460, 1461, 1462, 1470,and 1471. Activities include disposal of buildings and footings, surrounding concrete pads, access roads, and decommissioning of utilities.

Measures to minimize adverse effects have been incorporated into the proposal. These measures include:

1. Demolition operations will be conducted outside of the nesting period for a resident osprey located nearby to minimize disturbance during a critical period for the species.

2. Wetland boundaries will be identified prior to beginning the project and all activities will be such that no project activities will take place within wetland boundaries.

3. The Stormwater Pollution Prevention Plan (SWPPP) will include engineering controls to protect water resources including wetlands such as silt fencing to trap sediment and vegetation re-establishment of all bare soil areas immediately upon project completion to minimize soil erosion.

4. A hazardous materials survey will be conducted in areas to be demolished to identify hazardous materials. All required notification and coordination with regulatory agencies will be conducted. Engineering controls required by Air Force and other local, state, and federal requirements will be met to assure safe handling and disposal and to avoid adverse impacts to human health and safety and the environment.

Under the No Action Alternative, the buildings and the area will remain under-utilized. Buildings and

area will continue to require maintenance that otherwise could be prioritized to facilities currently needed for the mission.

PUBLIC REVIEW AND INTERAGENCY COORDINATION

The project will be implemented upon approval and after an interagency and public review period. A Notice of Availability for the Draft EA was submitted to Fairchild AFB Public Affairs Office and a press release made to local Spokane area media as well as on the installation's facebook web site. A copy of draft EA was deposited at the City of Spokane Library, main branch and the City of Airway Heights Library, and was also made available at the Fairchild AFB 92 Civil Engineer Squadron. The review period was 30 days and interested parties, groups, and persons were invited to submit written comments for consideration to the Fairchild AFB 92nd CES/CEAO Office. No comments were received.

A copy of the Final EA is on file and available for viewing at:

92 CES/CEAO
100W. Ent St.
Suite 155
Fairchild AFB, WA 99011
(509) 247-2313

CONCLUSION

Based on information and analysis presented in the EA conducted in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations, and implementing regulations set forth in 32 CFR Part 989 (Environmental Impact Analysis Process [EIAP]), as amended, and review of any public and agency comments, I conclude that implementation of the Proposed Action will not result in significant impacts to the quality of the human or natural environment. For these reasons, a finding of no significant impact (FONSI) is made and preparation of an environmental impact statement (EIS) is not warranted.

APPROVED BY:

RONALD R. DANIELS
ESOHC Executive Secretary
Fairchild Air Force Base, WA 99011
(509) 247-2291

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ACRONYMS AND ABBREVIATIONS

AICUZ	Air Installation Compatible Use Zone
AFB	Air Force Base
AFI	Air Force Instruction
AFRC	Armed Forces Reserve Center
AMC	Air Mobility Command
ARW	Air Refueling Wing
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
dB	decibel
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
EOD	Explosive Ordinance Disposal
ERP	Environmental Restoration Program
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
H2S	Hydrogen sulfide
mg/m^3	Milligrams per cubic meter
MSA	Munitions storage area
MTCA	Washington State Model Toxics Control Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NRHP	National Historic Preservation Act
NOx	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority Listing
O_3	Ozone
PAH	Polyaromatic Hydrocarbons
PCB	Polychlorinated biphenyls
PM_{10}	Particulate Matter less than 10 microns in diameter
$PM_{2.5}$	Particulate Matter less than 2.5 microns in diameter
PPA	Pollution Prevention Act
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
SO^2	Sulfur dioxide
TCE	Trichloroethylene
TCLP	Toxicity characteristic leaching procedure
TEC	Toxicity equivalent concentration
TPH	Total petroleum hydrocarbons
TSD	Treatment, Storage and Disposal
USAF	United States Air Force
UST	Underground storage tank
VOC	Volatile organic compound

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) describes the potential environmental consequences resulting from a proposal to demolish six facilities at Fairchild Air Force Base (AFB), Washington.

ENVIRONMENTAL IMPACT ANALYSIS PROCESS

This EA has been prepared by the United States Air Force (Air Force) in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR Part 989, *et seq.*, *Environmental Impact Analysis Process* (formerly known as Air Force Instruction [AFI] 32-7061).

PURPOSE AND NEED FOR ACTION

The purpose of this action is to demolish six facilities in the Munitions Storage Area (MSA) at Fairchild AFB. These facilities were constructed between 1952 and 1956. Currently, these facilities are not considered mission critical and are empty or underutilized. The unique construction and infrastructure of these facilities, as well as their location in a limited access area, would make it difficult to rehabilitate or renovate these facilities to another purpose. In addition, the demolition of these facilities will contribute to the Air Force-wide demolition goal to reduce the facility footprint 20 percent between Fiscal Year (FY) 2008 and FY 2020.

PROPOSED ACTION AND ALTERNATIVES

Fairchild AFB proposes to demolish six buildings located in the MSA with a total square footage of approximately 18,787 and associated roadways and to decommission utilities. This EA analyzes the impacts associated with the demolition comparing the Proposed Action and the no action alternative.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This EA provides an analysis of the potential environmental consequences during the demolition associated with the Proposed Action and the no action alternative. Eleven resource categories received thorough evaluation to identify potential environmental consequences. As indicated in Chapter 4.0, demolition of these facilities will not result in significant impacts to any resource area.

Air Quality: Project-related air emissions would be generated both on Base and within the region with the hauling of materials and other earth-moving activities. Demolition-related air emissions generated both on Base and within Spokane counties would be below the 100 tons per year *de minimis* and 10 percent region federal conformity thresholds set forth in 40 CFR 51 Subpart W. The emissions from fugitive dust (particulate matter less than or equal to 10 microns in diameter [PM_{10}] and particulate matter less than or equal to 2.5 microns in diameter [$PM_{2.5}$])

would be significantly less due to the implementation of control measures in accordance with standard practices. No direct operational emissions are expected to occur after the proposed project is completed, as the facilities would no longer exist. No new stationary sources or additional personnel would be added to the Base as a result of the proposed project. No changes to the Base's Synthetic Minor Operating permit are anticipated.

Noise: Demolition of facilities would have temporary, localized noise effects during the demolition phase. These localized noise increases may disrupt Base personnel working in nearby structures. Because the noise disruptions would be temporary and would be limited to daytime hours, impacts are considered insignificant.

Water Resources: The MSA at Fairchild AFB has two wetlands within or adjacent to the project area that would be avoided. Measures employing avoidance of wetlands, sediment catchment by silt fencing, and erosion control by restoring vegetation cover would be implemented to protect water quality and wetland function. Removal of impervious surfaces would have a slight benefit locally to infiltration and reduction of runoff impacts. Demolition of facilities will not significantly affect water quality or water availability.

Geologic Resources: There are no identified geologic resources of significant value within the project area. Demolition of facilities and site rehabilitation would have a positive beneficial effect on soils and no effect on geology, landform or mineral resources.

Biological Resources: Demolition activities would have no significant adverse effects to individual species or native plants or animals since the only plant or animal species likely to be displaced from this marginal habitat are individuals of common and locally abundant species. No impacts are anticipated to wetland habitats as mitigation measures to protect water quality will protect wetland habitat. No threatened, endangered, or special species/communities are known to occur or use the project area so there will be no adverse impact. Incidentally occurring listed, proposed, or candidate species are not likely to be adversely affected because no critical habitat exists in or near the project area.

Cultural Resources: Demolition activities are not expected to impact archaeological or traditional resources under the Proposed Action. Soils in the project area were extensively disturbed during the initial construction and operation of the facilities. Cultural resource inventories with State Historic Preservation Office (SHPO) consultation has determined that there are no historical, cultural, or traditional resources of significance within the MSA. No significant adverse consequences to cultural resources are expected.

Infrastructure and Utilities: Demolition of facilities would contribute to "Right Size" objectives to reduce infrastructure by 20% and to meet current and future mission needs. An overall benefit in decrease costs associated with maintain aging, underutilized infrastructure will be gained. A short duration utility outage while decommissioning utilities would be an inconvenience to adjacent offices and personnel. No significant adverse consequences would be expected and a long term beneficial effect will occur as a result of the Proposed Action.

Land Use Resources: Demolition of facilities would be consistent with Base plans. No conflicts

with existing on-Base land uses would result from the demolition. No significant adverse environmental consequences would be expected.

Safety and Occupational Health: Demolition activities would result in a short-term increase in the ground safety risks, however no significant adverse impacts are anticipated with the application of standard industrial safety standards. A Hazardous Materials Survey conducted prior to the project will identify site hazards and direct procedures to assure safe handling and protections to workers according to current regulation and Air Force policy.

Hazardous Materials and Waste Management: Demolition of facilities would occur adjacent to a Environmental Restoration Program (ERP) site with contaminated soils. Preliminary investigation indicates the contamination has not migrated to the project area and is localized. A fence perimeter secures the contaminated area restricting entry. Lead base paint and asbestos materials are anticipated in materials to be demolished. A Hazardous Materials Survey will be conducted to identify hazardous construction materials, soil contamination, unexploded ordnance, and explosive residuals in the project area. Hazardous waste generated during the demolition process would be managed in compliance with the Fairchild AFB Hazardous Waste Management Plan and all federal and state regulations. Demolition activities would generate solid wastes that would be recycled if possible or otherwise disposed of at a landfill. Landfill capacity would not be significantly altered with the implementation of the Proposed Action. No significant impacts will occur as a result of the Proposed Action.

Environmental Justice: Under environmental justice there would be no significant impacts expected from the Proposed Action because no adverse impacts have been identified and civilian populations are not in proximity to the proposed demolition site.

No Action Alternative: Under the No Action alternative, demolition of the six buildings and associated concrete and asphalt surfaces would not take place and no net change will occur. No significant environmental consequences or beneficial effects will occur.

Cumulative Effects and Irreversible Commitment of Resources: Other activities on the Installation expected to overlap with the Proposed Action have no significant adverse impacts to resources. The combined influence on resources would not have a significant adverse impact. Overlapping activities adjacent to the Installation combined with the Proposed Action are operations at Spokane Rock Products one half mile to the east of the MSA. Air quality and transportation are the resources with potential impact. The level of activity combined would not reach air quality thresholds or transportation capacity for the area. No cumulative impact would occur. No long term adverse impact for any resource would occur as a result of the Proposed Action.

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1.0 PURPOSE AND NEED

1.1 INTRODUCTION

Fairchild Air Force Base (AFB) proposes to demolish six buildings in the Munitions Storage Area (MSA). The demolition would include surrounding pavement, asphalt and dirt access roads, utilities, and include footings of the buildings and construction of a new boundary fence. .

In accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR Part 989, *et seq.*, Environmental Impact Analysis Process (EIAP) (formerly known as Air Force Instruction [AFI] 32-7061), this Environmental Assessment (EA) will determine whether the proposed action would result in any significant environmental, direct, indirect, or cumulative impacts. If impacts are predicted, mitigation will be prescribed to reduce impacts below the level of significance or recommend the preparation of an Environmental Impact Statement (EIS) to address unmitigated impacts or abandon the proposed action. This EA would also be used to guide the implementation of the proposed action consistent with laws, regulations, and U. S. Air Force standards for environmental stewardship

Section 1.2 provides background information that briefly describes Fairchild AFB. The purpose and need for the Proposed Action are described in Section 1.3. A detailed description of the Proposed Action and No Action alternative are provided in Chapter 2.0. Chapter 3.0 describes the existing conditions of various environmental resources that could be affected if the proposal were implemented. Chapter 4.0 describes how those resources would be affected by implementation of the Proposed Action and alternatives. Chapter 5.0 addresses the cumulative effects of the Proposed Action, as well as other recent, past, current, and future action that may be implemented in the Region of Influence (ROI) for the Proposed Actions.

1.2 BACKGROUND

Fairchild AFB is located in Spokane County, Washington and 12 miles west of the second largest city in Washington State, Spokane (Figure 1-1). Spokane is considered the regional economic hub for the Inland Northwest. Smaller communities, Medical Lake to the south and west and Airway Heights to the east are within five miles of the Base. The land immediately adjacent to Fairchild AFB is currently zoned Rural; is sparsely populated; and land uses are for the most part agricultural and light industrial.

Fairchild AFB traces its roots to January 1942, originating as the Spokane Army Air Depot. In 1948, the Base was renamed Spokane AFB and in 1950, the Base received its current name, Fairchild AFB. From 1942 to 1946, the Base served as a repair depot for damaged aircraft returning from the Pacific Theater. From 1947 to 1994, Base operations supported the B-29, B-36 and B-52 bomber missions which included storage of munitions for these aircraft. Between 1961 and 1965, the 567th Strategic Missile Squadron and nuclear warheads were supported by the Base. By the mid-60's, Fairchild AFB had a dual mission supporting bombers and air refueling

missions. By 1994, the B-52 bomber mission was transferred and Fairchild AFB was designated the 92nd Air Refueling Wing.

The MSA was constructed between 1950 and 1952 for storage, maintenance, and operational readiness and originally included two storage buildings with vaults, a maintenance building, two other assembly/maintenance buildings, two types of storage igloos, and a dry low-level radioactive waste disposal area. Buildings identified for storage of nuclear munitions were "sited" and have been identified in the historical record. At one time the MSA housed 85 Nuclear Gravity Bombs (25 B61-7 gravity bombs and 60 B83 gravity bombs), making Washington State the third largest holder of nuclear warheads in the world. Currently less than 1% of the MSA are being used for munitions storage and all nuclear warheads were removed by 1965. Many of the buildings are abandoned and empty. The buildings planned for demolition are "unsited"; primarily used for operations support and not used for munitions storage.

Construction during the Cold War Era typically used lead based paints and materials containing asbestos. Standard Fairchild AFB protocol for remodeling or demolition of buildings of this era is to inventory for environmental hazards prior to disturbance and to handle and dispose of materials in a manner that safeguards workers, the public, and the environment.

Figure 1-1. Fairchild Air Force Base (AFB) and Vicinity

1.3 PURPOSE AND NEED

The purpose of this Proposed Action is to demolish six buildings, associated utilities, and adjacent pavement located in the MSA at Fairchild AFB. A new fence would be constructed establishing a new west boundary for the MSA. Currently, the buildings are not considered mission critical and are empty or underutilized. The Air Force has set a demolition goal in response to budget shortfalls to reduce the service-wide facility footprint by 20 percent between Fiscal Year (FY) 2008 and FY 2020. The demolition of these buildings would contribute to the

overall Air Force demolition goal and to Fairchild AFB's long range plan to "right-size" infrastructure for the current and future mission (AMC CV memo, Appendix C).

1.4 OBJECTIVES OF THE PROPOSED ACTION

The objective of this Proposed Action is to lower maintenance costs by reducing the installation footprint, to remove buildings and aging infrastructure no longer needed for the present and future mission, and to remove potential environmental risk from buildings constructed during an era using lead based paint and asbestos.

The result of the Proposed Action would be to restore the site to a sustainable, low cost condition with no significant environmental impact and no impact to future uses. Methods employed would ensure that no hazardous conditions are created or left behind that would impact future uses or occupants of Fairchild AFB or nearby residents.

1.5 SUMMARY OF KEY ENVIRONMENTAL COMPLIANCE REQUIREMENTS

National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190), as amended

NEPA requires all Federal agencies to use a systematic, interdisciplinary approach in decision making which may have an impact on man's environment. Therefore, NEPA directs agencies to assess expected environmental impacts of all Federal actions and proposals. In turn, this data must be considered in the decision making process. Compliance with NEPA is accomplished through the guidance outlined in 32 CFR 989, Environmental Impact Analysis Process (EIAP).

Other Environmental Statutes and Regulations

To comply with NEPA, this analysis considers other relevant environmental statutes and regulations. According to the Council on Environmental Quality regulations, requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively." Applicable state and federal environmental laws and regulations are :

- Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended)
- Clean Water Act (CWA) of 1977 (33 USC § 1251 *et seq*.)
- Pollution Prevention Act of 1990
- National Historic Preservation Act (NHPA) of 1966 (16 USC § 470)
- Endangered Species Act (ESA) of 1973 (16 USC §§ 1531–1544, as amended)
- Archaeological Resources Protection Act
- Comprehensive Environmental Response Compensation and Liability Act (CERCLA)(40 CFR 302)
- Resource Conservation and Recovery Act (RCRA)

- Toxic Substances Control Act (TSCA) of 1970
- Occupational Safety and Health Administration (OSHA) regulations
- Executive Order (EO) 11988 (Floodplain Management)
- EO 11990 (Protection of Wetlands)
- EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section describes the Proposed Action for the demolition of six buildings in the MSA. This section also describes the No Action alternative which would leave the buildings as-is.

2.1 PROPOSED ACTION

Implementation would involve the demolition of six buildings with a total square footage of about 18,787 square feet, access roads, adjacent pavements and decommissioning utilities associated with the buildings (Table 2-1 and Figure 2.3). Approximately 1.7 acres would be restored to dry land grass. Figure 2-1 shows the location of the buildings to be demolished within the MSA.

Table 2-1. Buildings Proposed for Demolition

Building Number	Function	Footprint (square feet)	Date Constructed
1457	Warehouse for Spare Inert Munitions Parts	4360	1956
1460	Surge Tank	4494	1952
1461	Water Pump Station	178	1956
1462	Workshop for Conventional Munitions	5355	1952
1470	Vehicle Operations Parking Shed	2200	1954
1471	Vehicle Operations Parking Shed	2200	1954

The demolition project involves the following actions:

- Inventory for environmental hazards and abate as needed.
- Demolish buildings and dispose of materials using approved hazard reduction methods
- Remove all floor slabs, footings, sidewalks, concrete docks, concrete and asphalt parking, and curbs
- Demolish underground service conduit and conductors
- Commission Avista Utilities to cap gas service lines at the main line

- Cap water lines at the mains and abandon in place
- Cap sewer lines at the main and remove including 2 manholes south of B1462
- Remove communications equipment and fire alarm infrastructure
- Restore and backfill site with 3 inches of topsoil and hydro-seed with a dry land seed mix

Figure 2-1. Munitions Storage Area Proposed Project Area, Fairchild AFB, Washington

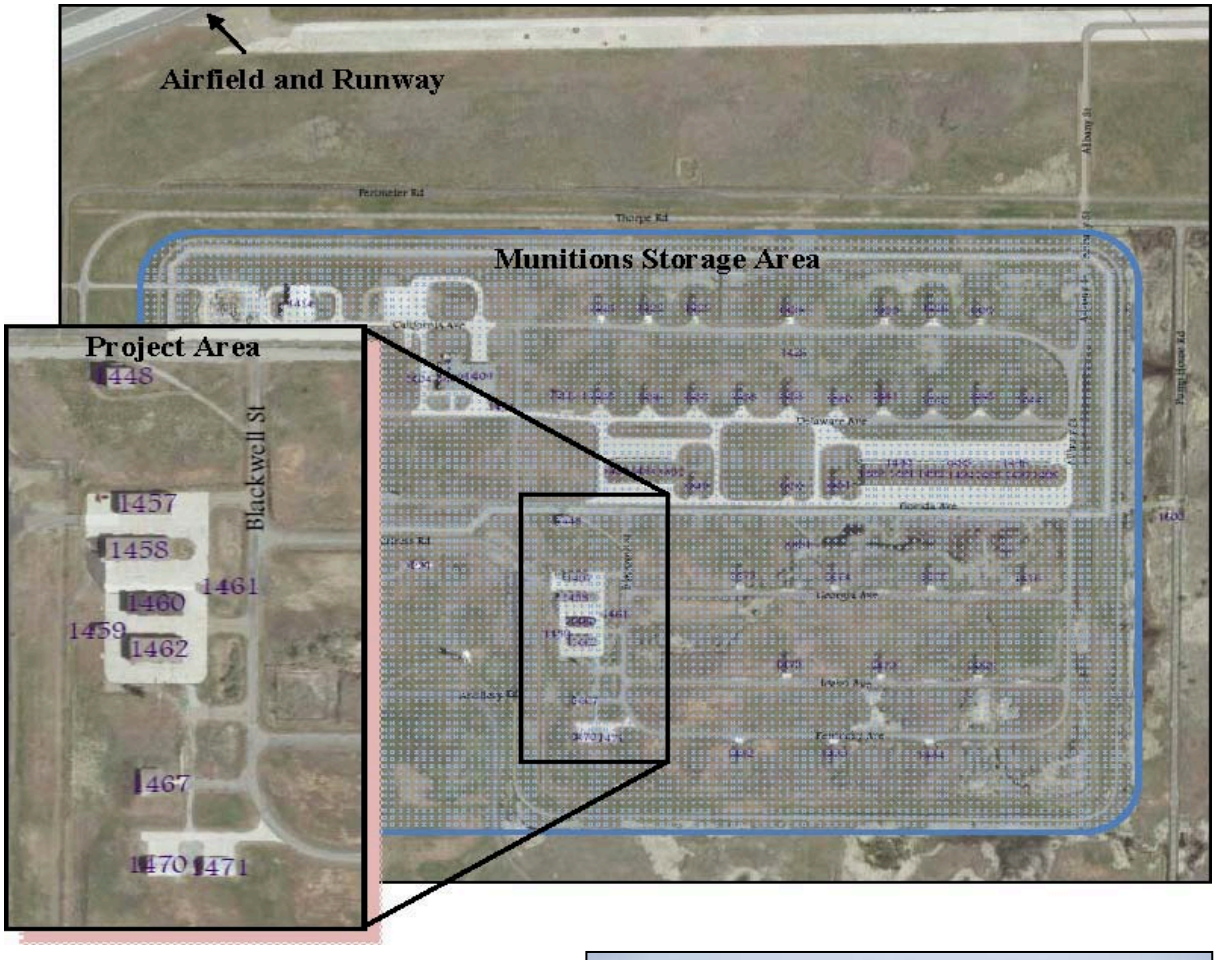
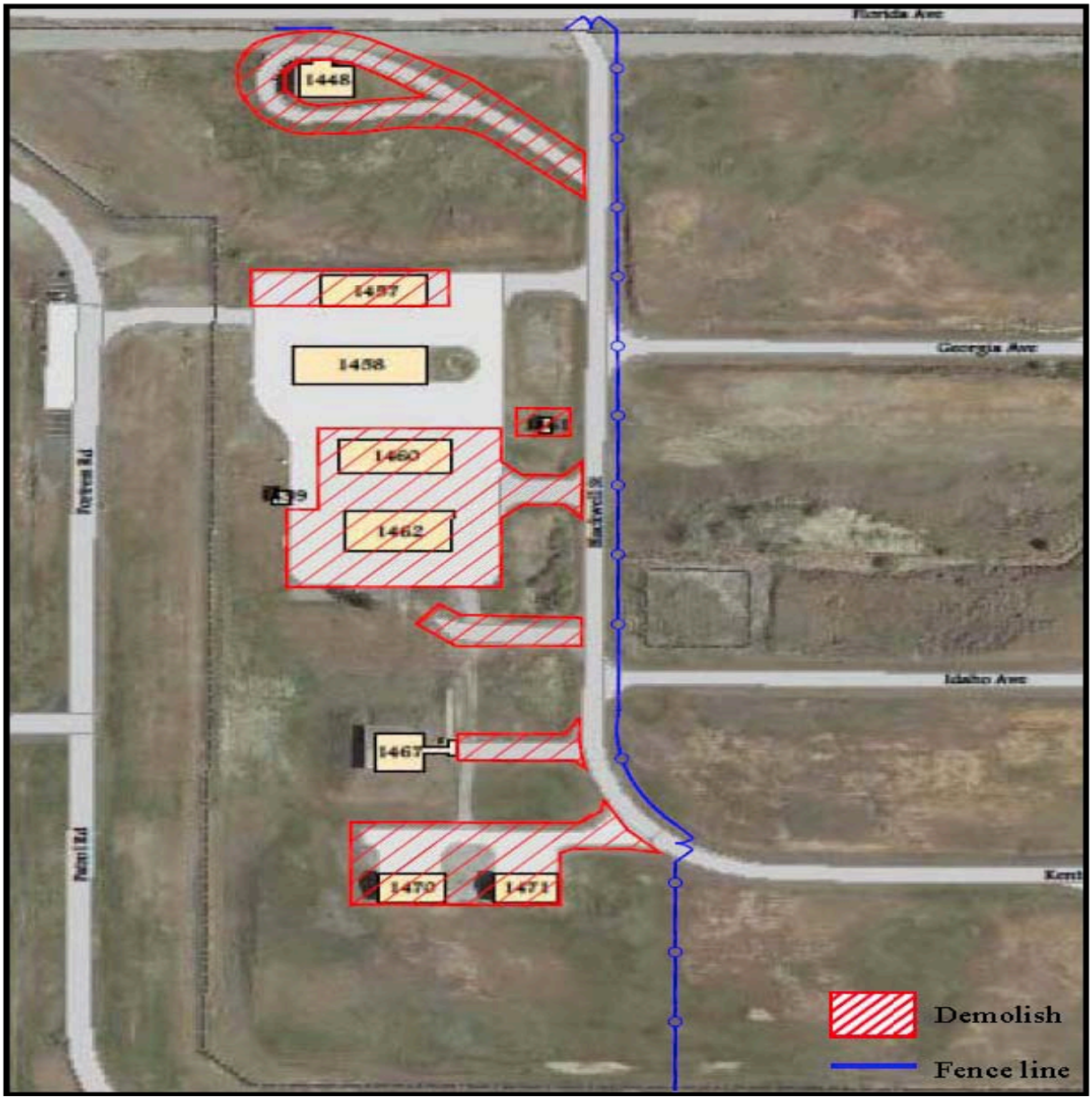


Figure 2.2 Photograph of a portion of the area to be demolished i.e., Buildings 1462,1460, and 1458, associated concrete pads and asphalt access road.

Figure 2-3. Munitions Storage Area Buildings Proposed for Demolition, Fairchild AFB, Washington



2.2 NO ACTION ALTERNATIVE

Under the No Action alternative, the proposed demolition would not be implemented. The facilities would remain in their current condition.

2.3 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

Buildings 1448 and 1467 were initially considered for demolition but were eliminated from consideration. These buildings are constructed with very thick concrete reinforced walls making demolition very costly. Annualized maintenance costs is only $2.84 per square foot (reference Table 2-2) whereas demolition costs are estimated at $670 per square foot. The return on

investment of demolition for these two buildings would be 236 years. Other factors were evaluated as well such as energy intensity per square foot, and whether or not buildings were required to support the mission. No other alternatives have been considered based upon the need to maximize cost efficiencies in the project.

Table 2-2. Summary of Factors Used to Develop Alternatives for the Munitions Storage Area, Fairchild Air Force Base, Washington

Building	**Demo** $/SF	**Annual Energy Intensity** MBTU/SF	**Annualized Facility Cost** $/SF	**Comments**
1448	$670.00	0.0031	$2.84	High cost due to 10' thick walls
1457	$3.01	0.0031	$2.84	Part of MILCON for new Admin Bldg
1458	$3.01	3.0337	$3.89	No Mission Requirement
1461	$8.26	0.0000	N/A	No Mission Requirement
1462	$5.97	3.0368	$3.54	No Mission Requirement
1467	$670.00	0.0031	$2.84	High cost due to 10' thick walls
1470	$3.64	0.0031	$2.84	No Mission Requirement
1471	$3.64	0.0031	$2.84	No Mission Requirement
Pavement	$0.80	N/A	N/A	No Mission Requirement

2.4 COMPARISON OF ALTERNATIVES

The Proposed Action is the preferred alternative. This alternative would meet installation and project objectives of reducing installation footprint and "right-sizing" infrastructure for the mission. The proposal remediates existing environmental conditions and restores conditions to a sustainable maintenance level ready for future uses as they arise.

The No Action alternative serves as a baseline against which other alternatives can be evaluated. This alternative is required under the Council on Environmental Quality regulations. Under the No Action alternative, the demoliton of the buildings proposed would not be accomplished, existing environmental hazards would remain, and reduction of installation footprint goals would not be met. It is likely these underutilized buildings would receive a lower priority for funding maintenance in budget limiting years and would fall into disrepair.

3.0 AFFECTED ENVIRONMENT

3.1 AIR QUALITY

3.1.1 Definition of Resource

Federal Air Quality Standards. Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional

meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards (AAQS). Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the NAAQS, represent the maximum allowable atmospheric concentrations and were developed for seven "criteria" pollutants: O_3, NO_2, CO, SO_2, particulate matter less than or equal to 10 microns in diameter (PM_{10}), particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and Pb. Because volatile organic compounds (VOCs) and nitrogen oxides (NO_x) are precursors to the formation of O_3 in the atmosphere, control of these pollutants is the primary method of reducing O_3 concentrations in the atmosphere. Areas that meet the NAAQS for a criteria pollutant are designated as being in attainment; areas not meeting NAAQS are designated as nonattainment areas for specified pollutants.

State Air Quality Standards. Under the CAA, state and local agencies may establish AAQS and regulations of their own, provided that these are at least as stringent as the federal requirements.

Prevention of Significant Deterioration (PSD). Section 162 of the CAA further established the goal of PSD of air quality in all international parks, national parks which exceeded 6,000 acres, and national wilderness areas and memorial parks which exceeded 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all other attainment or unclassifiable areas were defined as Class II areas. protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction

Table 3-1. Federal and State Ambient Air Quality Standards

Air Pollutant	Averaging Time	Washington AAQS[2]	Federal (NAAQS)	
			Primary	Secondary
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm 35 ppm	9 ppm 35 ppm	------
Nitrogen Dioxide (NO_2)	AAM	0.053 ppm	0.053 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	AAM 24-hour 3-hour	0.030 ppm 0.140 ppm —	0.030 ppm 0.140 ppm ---	------0.500 ppm
Particulate Matter (PM_{10}) [1]	AAM 24-hr	50 □g/ m3 150 □g/ m3	--150 □g/ m3	--150 □g/ m3
Particulate Matter ($PM_{2.5}$) [2]	AAM 24-hour	15 □g/ m3 35 µg/m3	15 □g/ m3 35 □g/ m3	15 □g/ m3 35 □g/ m3
Ozone (O_3) [3]	1-hour 8-hour	---0.075 ppm	0.120 ppm 0.080 ppm	0.120 ppm 0.080 ppm
Lead (Pb) and Lead Compounds	Calendar Quarter	1.5 □g/ m3	1.5 □g/ m3	1.5 □g/ m3

Sources: USEPA 2008a, 2008b; Washington DOE website: AAM = Annual Arithmetic Mean; ppm = parts per million□g/ m3 = micrograms per cubic meter

(1)Standards, other than for O3 and those based on annual averages, are not to be exceeded more than once a year. The O3 standard is attained when the number of days above the standard in three continuous calendar years is less than four.

(2) Concentrations are expressed in units in which they were promulgated. Units shown as µg/m3 are based upon a reference temperature of 25 degrees Celsius and a reference pressure of 760 millimeters of mercury.

(3) Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

(4) Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

permitting system.

Visibility. CAA Section 169(a) established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that addresses contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM_{10} and SO_2 in the lower atmosphere.

General Conformity. CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each state's SIP for attainment of the NAAQS. Federal activities must not:

(a) cause or contribute to any new violation;

(b) increase the frequency or severity of any existing violation; or

(c) delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas.

3.1.2 Affected Environment

Of the six criteria pollutants identified by the U.S. Environmental Protection Agency (EPA), two are of concern in Spokane County, specifically carbon monoxide (CO) and particulate matter (PM). Motor vehicles are the largest contributors to CO, with the highest concentrations occurring during the winter months. PM comes from a variety of sources including dust from unpaved and paved roadways, construction activities, gas and diesel engines, and indoor/outdoor burning.

Spokane County is within the Eastern Washington-Northern Idaho Interstate (EWNII) Air Quality Control Region. Spokane County is classified as being in attainment with all criteria pollutants (USEPA 2004b). CO and PM Attainment Plans rely on control strategies for tracking vehicle miles traveled; vehicle emissions inspection and maintenance programs; oxygenated fuels; transportation conformity; control measures for residential wood combustion and control strategies for windblown dust.

The Spokane Regional Clean Air Agency works with Fairchild AFB in monitoring and implementing the installation's stationary source permits and emissions inventory. Emissions from mobile sources are not tracked on Fairchild AFB. Fairchild AFB is classified as a synthetic minor pollution source and has voluntary limits on air emissions. There are various stationary combustion sources at Fairchild AFB, mostly from boilers and generators; volatile sources from organic liquids, and miscellaneous particulate sources from abrasive blasting, woodworking

equipment, and a dust collection system designed to capture emissions from a firing range.

Regional wind patterns generally transport air pollutants eastward from Fairchild AFB toward the Spokane Valley. Winter months have the highest incidences of degraded air quality due to wood burning stoves and vehicular emissions. These emissions are exacerbated by temperature inversions, stagnant air reduces air quality, and valley topography.

3.2 NOISE

3.2.1 Definition of Resource

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses (e.g., housing tracts or industrial plants). Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, and aircraft flight tracks around airports), or randomly. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person or animal).

The physical characteristics of noise, or sound, include its intensity, frequency, and duration. Sound is created by acoustic energy, which produces minute pressure waves that travel through a medium, like air, and are sensed by the ear drum. This may be likened to the ripples in water that would be produced when a stone is dropped into it. As the acoustic energy increases, the intensity or amplitude of these pressure waves increase, and the ear senses louder noise. The unit used to measure the intensity of sound is the decibel (dB). Sound intensity varies widely (from a soft whisper to a jet engine) and is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is -6 (minus 6). Obviously, as more zeros are added before or after the decimal point, converting these numbers to their logarithms greatly simplifies calculations that use these numbers.

The frequency 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. Sound measurement is further refined through the use of "A-weighting." The normal human ear can detect sounds that range in frequency from about 20 Hz to 15,000 Hz. However, all sounds throughout this range are not heard equally well. Therefore, through internal electronic circuitry, some sound meters are calibrated to emphasize frequencies in the 1,000 to 4,000 Hz range. The human ear is most sensitive to frequencies in this range, and sounds measured with these instruments are termed "A-weighted." Throughout this document, dB levels can be assumed to be A-weighted.

The duration of a noise event, and the number of times noise events occur, are also important

considerations in assessing noise impacts.

As a basis for comparison when noise levels are considered, it is useful to note that at distances of about 3 feet, noise from normal human speech ranges from 63 to 65 dB, operating kitchen appliances range from about 83 to 88 dB, and rock and roll concerts may approach 110 dB.

Maximum Sound Level

The L_{max} metric defines peak noise levels. L_{max} is the highest sound level measured during a single noise event (e.g., an aircraft overflight or the operation of heavy construction equipment). L_{max} is important in judging a noise event's interference with conversation, sleep, or other common activities.

Day-Night Average Sound Level

The number of times noise events occur during given periods is also an important consideration in assessing noise impacts. This metric sums the individual noise events and averages the resulting level over a 24-hour period. Thus, it is a composite metric which 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. This metric adds 10 dB to those events that occur between 10 p.m. and 7 a.m. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the day time. This cumulative metric does not represent the variations in the sound level heard. Nevertheless, it does provide an excellent measure for comparing environmental noise exposures when there are multiple noise events to be considered. Its use in determining which land uses are compatible with a given noise level is endorsed by the scientific community and several governmental agencies (USEPA 1974; Federal Interagency Committee on Urban Noise 1980; Federal Interagency Committee on Noise 1992; Air Force 1999).

Finally, it should be noted that ambient background noise is not considered in the noise calculations that are presented below. There are two reasons for this. First ambient background noise, even in wilderness areas, varies widely depending on location and other conditions. For example, studies conducted in an open pine forest in the Sierra National Forest in California have measured up to a 10 dB variance in sound levels simply due to an increase in wind velocity (Harrison 1973). In general however, ambient noise levels in a typical low-density residential area can be expected to be approximately 51 dB and noise levels in a typical farm field (likely similar in noise level to Fairchild AFB) can be expected to be approximately 44 dB (USEPA 1974). In calculating noise levels, louder sounds dominate the calculations and in general, aircraft and other transportation-related noise would be expected to be the dominant noise sources characterizing the acoustic conditions in the ROI. Therefore, it is reasonable to assume that ambient background noise in the project's ROI would have little or no effect on the calculated L_{dn}.

Using measured sound levels as a basis, the DoD and the U.S. Department of Transportation, Federal Highway Administration have developed several computer programs to calculate noise levels resulting from aircraft operations and construction/demolition activities. Sound levels

calculated by these programs have been extensively validated against measured data, and have been proven to be highly accurate.

3.2.2 Affected Environment

The portions of the Fairchild AFB MSA that are affected by the Proposed Action are exposed to aircraft noise between 65 dB L_{dn} and 75 dB L_{dn} (USAF 1995). Some additional noise results from day-to-day activities associated with operations, maintenance, and the industrial functions associated with the operation of Fairchild AFB. These noise sources include the operation of ground-support equipment, and other transportation noise from vehicular traffic. However, this noise is generally temporary and highly localized. Adjacent to the MSA and Fairchild AFB, cumulative noise levels are attributed to seasonal farming activity, light to moderate vehicular movement on secondary roads and Highway 2, occasional heavy rail transportation, and flight take off and landings at the Spokane International Airport.

3.3 WATER RESOURCES

3.3.1 Definition of Resource

Water resources include both surface water and groundwater. Surface water includes the lakes, rivers, streams, and wetlands within a watershed. Groundwater includes aquifers. The Clean Water Act (CWA) is the primary federal law that protects the waters of the United States. Since 1972, amendments to the CWA and subsequent regulations have been developed to meet the objectives of maintaining and restoring the integrity of those water bodies. The National Pollutant Discharge Elimination System (NPDES) permit program establishes federal limits on discharge of pollutants to surface waters.

The Region of Influence (ROI) includes the project area and adjacent area that includes drainage conveyance from the project area to the point of collection and infiltration and is no more than approximately 1/4 mile from the project area.

3.3.2 Affected Environment

Wetlands. The MSA is located in the southern portion of Fairchild AFB. Nearly flat lying to undulating topography, diverse soils in complex with basalt bedrock, and shallow groundwater hydrology create conditions for a complex of wetlands and vernal pools in the vicinity of the MSA. Fairchild AFB's wetland inventory identifies approximately 200 acres of wetlands and vernal pools in the area, all of which are isolated from surface water rivers or streams. There are three wetlands identified within ROI of the Proposed Action. A wetland field verification and delineation was conducted for this analysis and refined the inventory by omitting one of the wetland (Wetland Area 11A-23) and by reducing the size of another wetland (removes north portion of Wetland Area 11A-31). The wetland delineation report rates the remaining wetlands as Class III with high values for water quality and low values for both habitat and hydrologic function. The wetland report is in Appendix B *Wetlands Assessment*.

Figure 3-1. Wetland areas as mapped on Fairchild AFB wetland inventory within and near the proposed Project Area, Fairchild AFB, Washington. (2011 wetland verification/delineation removes 11A-23 and removes the northern portion of 11A-31).

Storm Water. The majority of the land surrounding and within the MSA is unimproved lands where storm water is conveyed by dispersed overland flow. Engineered catchment and conveyance of storm water is designed north of the MSA in the developed portion of the Base and drains to a passive treatment system of settling ponds prior to being routed to an adjacent agricultural field where it infiltrates. All of the storm water from the MSA is retained by ponds or wetlands and dissipates either by evaporation or is percolated into groundwater aquifers i.e., storm water is not conveyed from the area by surface waterways. Roads in the area contribute to concentration and retention of storm water in this flat lying topography, acting like dams to surface runoff.

Groundwater. The groundwater beneath Fairchild AFB consists of variable, shallow, unconfined aquifers overlying deeper aquifers confined by basalt bedrock layers. Depth of shallow groundwater depends on a highly complex and variable stratigraphy of glacial flood deposits overlying bedrock. Seasonal water tables may be at the surface in years of high precipitation and average depth to water table is about 5 - 20 feet. Groundwater monitoring by the Environmental Restoration Program (ERP) has identified several sites with high levels of tetrachloroethylene (TCE) in the groundwater. No TCE has been identified in the groundwater under the MSA. ERP Site RW-11 is locate just east of the proposed project area and to the south of Wetland 11A-31. It is the previous site of a 5000 gallon underground storage tank (UST). Volatile organic compounds and heavy metal contamination has been identified in soils at the

site. Water tests in Wetland 11A-31 have not tested positive for contamination indicating contamination may be confined to soils in the immediate area of the UST. The area has been identified as needing further survey to determine measures for remediation.

Surface Water. Fairchild AFB is located at the hydrologic head of three watershed basins, the Lower Spokane River, Hangman Creek, and the Palouse River. There are several open drainage ditches, storm water detention ponds/swales, and numerous isolated wetlands. The topography is nearly flat to undulating with no indication that surface runoff is conveyed by surface flow to stream channels within the Base boundary. The primary function of surface water features on the Base is temporary containment of storm water and groundwater recharge.

3.4 GEOLOGIC RESOURCES

3.4.1 Definition of Resource

Geologic resources include topography, geology, and soils. Topography refers to an area's surface features including its vertical relief. These features may have scientific, historical, economic, and recreational value. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment.

The ROI for these resources is the immediate area of the Proposed Action.

3.4.2 Affected Environment

Fairchild AFB is situated within the channeled scablands of the Columbia River Basin which has been shaped by large basalt flows, windblown soils, and the great floodwaters of the glacial ice dam break of Glacial Lake Missoula.

Topography of Fairchild AFB is flat to gently undulating with slopes rarely exceeding ten percent. The average elevation is approximately 2340 feet.

Soils in the channeled scablands can be quite variable and contrasting. Typically soils consist of shallow regolith underlain by basalt bedrock with a thin layer of volcanic ash influenced loess on the surface. Deeper soils occur associated with glacial flood and melt water deposits of sand, silts, and clays. These areas can retain subterranean water ways. Remnant clayey lacustrine materials or deeply weathered basalt bedrock often perch water tables in the area.

Soils and topography within the proposed project area have been altered by previous earth-moving activities related to the construction, operation and maintenance of the buildings in the project area. Within the MSA, USDA Natural Resource Conservation Service mapped the Cheney gravelly silt loam and the Cheney-Uhlig complex in the project area. (NRCS 2006). These soils are characterized as well drained soils with inclusions of wetland and shallower soils. Infiltration is moderately rapid except where included soils occur and in that case, storm water either runs off rapidly because soils are shallow or collects in depressions forming wetlands.

3.5 BIOLOGICAL RESOURCES

3.5.1 Definition of Resource

Biological resources consist of native or naturalized plants and animals, along with their habitats, including wetlands. Although the existence and preservation of biological resources are both intrinsically valuable, these resources also provide essential aesthetic, recreational, and socioeconomic benefits to society. The analysis focuses on plant and animal species and vegetation types that are important to the functioning of local ecosystems, are of special societal importance, or are protected under federal or state law or statute.

Biological resources include vegetation and habitat, wetlands, fish and wildlife, and special-status species. Due to the limited nature of the Proposed Action, the ROI for biological resources is defined as the MSA in some cases, the southern portion of Fairchild AFB.

3.5.2 Affected Environment

Vegetation. Improved and semi-improved areas make up 80% of Fairchild AFB and are mostly found in the northern portion of the base. Non-native landscaping and groundcover in the improved areas have removed much of the historic vegetative cover. The semi-improved areas are primarily composed of mowed non-native and native grasses. The remaining 1,000 acres is undeveloped land that contains open grass fields, stands of ponderosa pines, wetland areas, native grassland and shrubs, and areas of mixed native and non-native grasses and invasive weeds.

The proposed project area is managed as improved, is non-irrigated and is vegetated with herbaceous, woody, and other urban/built up developed vegetation. The area is mowed and/or treated with herbicides to reduce weed growth and seed dispersal.

Spalding's catchfly *(Silene spaldingii)* and water howelia (*howellia aquatilis)* are threatened plant species, both federally and state listed. Spalding's catchfly occurs on the north side of mounded soils and water howelia occurs in good condition wetland habitat. A conservation area exists for the Spalding catchfly south of the MSA. The community type, Ponderosa pine/snowberry, *(pinus ponderosa/symphocarpus albus)* is listed as a rare community type by the state of Washington and occurs in isolated pine stands south of the MSA. Several other wetland sensitive plant species have been identified by the Washington Natural Heritage Program; most of which of only been identified within the Spalding Catchfly conservation area and are associated with vernal pools. These plant species have not been identified near the project area or in the MSA. They are not expected to occur in the MSA due to the history of alteration of the landscape.

Wildlife. In general, wildlife habitat and species present within the project area and at Fairchild AFB are typical of urban and suburban areas and open pine savanna areas. Migratory birds and raptors common to eastern Washington frequent the area. Small mammals include mice, voles, coyote, marmot, and pocket gophers. A small deer herd is isolated within the boundary fence, numbers about 40, and roams the southern end of the Base.

Several bird species, designated as Federal species of concern, state candidate species, state monitor species, or state sensitive species have been sighted or are known to have nested near or on Fairchild AFB. Most of these species are migratory in nature. These species include: golden eagle, burrowing owl, grasshopper sparrow, western bluebird, red-necked grebe, great blue heron, turkey vulture, Caspian tern, black tern, and osprey. The white-tailed jackrabbit, a state candidate species, is known to occur adjacent to Fairchild AFB but has not been sighted for many years on the Base. Columbian ground squirrel and American badger, both being carefully monitored by the Washington Department of Fish and Wildlife, have been documented as occurring at Fairchild AFB but recent surveys (EWU 2005) have not indicated their presence on Base. The likelihood of these species nesting or denning in the MSA area is very small due to development and long term habitat removal and disturbance of the area. An osprey nest has been present just outside the fence line at the southwest corner of the MSA. The nest is near a power line and adjacent to a main road. Daily helicopter flights within 200 yards of the nest, parachute training nearby, and vehicular traffic are routine activities in the area. Osprey have occupied the nest for over ten years without signs of displacement from the nest. A fledgling is raised nearly every year usually beginning in April (Wald 2011).

Fish. There are no fish at the main installation of Fairchild AFB.

Vernal Pools and Wetlands. There are no vernal pools identified within the MSA. Vernal pools are located south of the MSA and offer a unique suite of plant species and habitat unlike other wetlands on the Base. Wetlands have been discussed in Section 3.4.

3.6 CULTURAL RESOURCES

3.6.1 Definition of Resource

Cultural resources are any prehistoric or historic district, site, or building, structure, or object considered important to a culture, subculture, or community for scientific, traditional, religious or other purposes. They include archaeological resources, historic architectural resources, and traditional resources. Archaeological resources are locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains (e.g., arrowheads, bottles). Historic architectural resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. Traditional resources are associated with cultural practices and beliefs of a living community that are rooted in its history, and are important in maintaining the continuing cultural identity of the community.

Historic properties (as defined in 36 CFR 60.4) are significant archaeological, architectural, or traditional resources that are either eligible for listing, or listed in, the NRHP. Historic properties are evaluated for potential adverse impacts from an action, as are significant traditional resources identified by American Indian tribes or other groups. In 1999, the DoD promulgated its *American Indian and Alaska Native Policy*, which emphasizes the importance of respecting and consulting with tribal governments on a government-to-government basis. The policy requires an assessment, thorough consultation of the effect of proposed DoD actions that may have the potential to significantly affect protected tribal resources, tribal rights, and Indian lands before decisions are made by the services.

The ROI includes the immediate project area within the MSA.

3.6.2 Affected Environment

No known prehistoric or historic resources have been identified and no known potential for historic resources has been identified in the MSA during cultural resource surveys on Fairchild AFB. Five complete historical and archaeological surveys have been completed at Fairchild AFB including within the MSA. Findings include six archaeological sites, one of which may be eligible for nomination to the National Register of Historic Places. Two WWII and two Cold War buildings may be eligible for inclusion in the National Register. One additional WWII building is eligible for nomination to the National Register. None of these sites or structures are located in the MSA.

There are no documented sites or areas of known cultural importance to local Native American tribes and the potential for discovery of such sites is low. The probability is also low that undisturbed, significant archaeological resources, including human graves, would be discovered within the MSA.

Buildings proposed for demolition were constructed during the Cold War Era between 1952 and 1956. Some buildings have undergone varying degrees of change, both internally and externally. SHPO consulted on the most recent, comprehensive Cultural Resource Inventory for Fairchild AFB conducted in 2005 and concurred with the determination that these buildings have little historical significance in architectural integrity or character (Selser 2011).

3.7 INFRASTRUCTURE AND UTILITIES

3.7.1 Definition of Resource

Infrastructure consists of the systems and physical structures that enable a populace to function and to accommodate mission operations. On Fairchild AFB infrastructure includes a transportation network, utilities, communications, airfield and support buildings, water supply, sanitary systems and wastewater, administrative and maintenance buildings, and solid waste disposal.

3.7.2 Affected Environment

Buildings proposed for demolition are serviced by buried water, communications, electricity, gas or water boiler heat, and sewer. The area is surrounded by security fencing to limit access to the restricted area of the MSA.

3.8 LAND USE RESOURCES

3.8.1 Definition of Resource

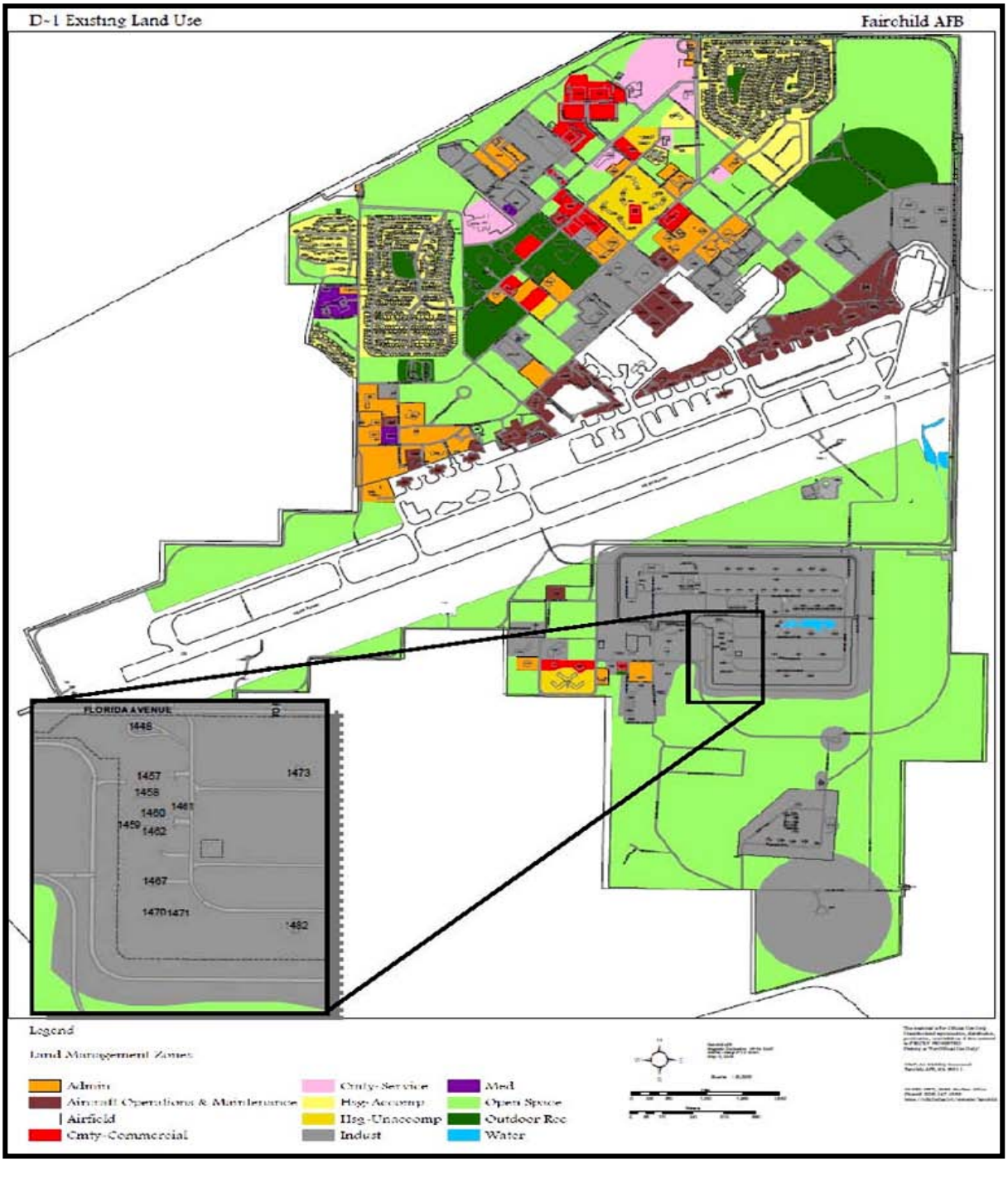
Land use is the classification of either natural or human-modified activities occurring at a given location. Natural land use includes rangeland and other open or undeveloped areas. Human-modified land use classifications include residential, commercial, industrial, airfield,

recreational, and other developed areas. Land use is regulated by management plans, policies, and regulations determining the type and extent of land use allowable in specific areas and protection specially designated for environmentally sensitive areas. The ROI for land use consists of all the lands of Fairchild AFB, in particular the MSA.

3.8.2 Affected Environment

The Base General Plan for Fairchild AFB has the following land use classifications are: *airfield/industrial, community, administrative, open space, outdoor recreation, training, Survival School Area, and Washington Air National Guard*. (Figure 3.2 and Table 3.3).

Figure 3-2. Base General Plan. Fairchild Air Force Base, Washington



The project area is about 3 acres with the area to be demolished measuring about 1.7 acres. The land classification is *industrial*. The project area comprises 0.15% of this classification. Constraints to development are safety clear zones around potentially explosive areas, wetlands, threatened and endangered species and habitats, cultural resources, and other areas that present public hazards such as contamination sites.

Table 3-2. Current and Planned Future Land Use Categories and Land Use Area. Fairchild AFB, , Washington

Land Use Category	Current Use (acres)	Planned Future Use (acres)
Administrative	83	242
Airfield, Maintenance, Industrial, Training	2022	2082
Community	473	742
Outdoor Recreation	203	113
Survival School	90	238
WA Air National Guard	65	107
Wetlands	212	212
Conservation Area	72	72

Note: The remaining 700 acres is occupied by roads, the "wildlife area", and other lands available for development, considered "open area".

3.9 SAFETY AND OCCUPATIONAL HEALTH

3.9.1 Definition of Resource

This section addresses ground, explosive, and flight safety with regard to day-to-day operations at Fairchild AFB and construction job site safety of those providing project-related services.

3.9.2 Affected Environment

Ground Safety . Day-to-day operations and maintenance activities are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Office of Safety and Health requirements.

Anti-terrorism/Force Protection. As a result of terrorist activities, the DoD and the Air Force have developed a series of AT/FP guidelines for military installations. These guidelines address a range of considerations that include access to the installation, access to facilities on the installation, facility siting, exterior design, interior infrastructure design, and landscaping. The intent of this siting and design guidance is to improve security, minimize fatalities, and limit damage to facilities in the event of a terrorist attack.

Explosives Safety. Safety clear zones are associated with the runway, the MSA, and the EOD area at Fairchild AFB. Permissible uses, structure heights, and construction material in these areas are prescribed to protect both the safety of the aircrews and the safety of persons and property. All ordnance is handled and stored in accordance with Air Force explosive safety directives (Air Force Manual 91-201), and all munitions maintenance is carried out by trained,

qualified personnel using Air Force-approved technical procedures. Explosives safety quantity-distance (Q-D) arcs are associated with the MSA and extend outwards from the MSA for several hundred feet.

As part of the contracts for demolition services, standard terms and conditions include safety as a priority. Areas of concern include compliance with regulations typical to demolition projects, such as confined space regulations; minimum personal protection equipment standards including footwear, hardhats, and eye protection; heavy equipment operations; and limited access to hazardous areas. It is suspected that buildings to be demolished could contain lead base paint and/or asbestos and soils or groundwater may contain hazardous substances which will require pre-disturbance surveys to determine appropriate and safe methods of demolition and materials handling within regulations and safety standards.

3.10 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

3.10.1 Definition of Resource

This section describes the affected environment associated with solid waste management, hazardous materials and wastes, storage tanks, asbestos-containing materials (ACMs), and the Environmental Restoration Program (ERP) sites.

Municipal solid waste management and compliance at Air Force installations is established in AFI 32-7042, *Solid and Hazardous Waste Compliance*. In general, AFI 32-7042 establishes the requirements for installations to have a solid waste management program to incorporate a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention. AFI 32-7080, *Pollution Prevention Program*, addresses source reduction, resource recovery, and recycling of solid waste.

The ROI for hazardous materials and wastes is the project area where structural and ground disturbance would occur.

3.10.2 Affected Environment

Nuclear bombs were stored at the MSA. Storage structures were documented and termed "sited". The building scheduled for demolition are "unsited" and have no documented use or storage of munitions. The buildings were generally used for administration and as workshops. An extensive Hazardous Material Survey will be completed of all structures and grounds within the project area prior to contract start up. The age of the buildings suggest that material used may contain asbestos and/or lead based paints and that light fixtures may contain mercury.

ERP site RW-11 located east of the proposed project area contains elevated concentrations of metals (arsenic, beryllium, lead, chromium) and VOC's (specifically chloroform) in soils. Soil contamination was found during removal of two underground storage tanks. The concentrations exceed either MCL or MTCA method A/B cleanup levels. The area is fenced to limit access and for health and safety. This site is adjacent but not within the area to be disturbed during demolition. A fence line is proposed adjacent to the area. The wetland between RW-11 and Building 1467 has been tested and no contamination was found indicating

that the contamination has not moved from the UST area. An extensive Hazardous Material Survey is planned to further confirm the location of the contamination relative to the project area prior to demolition of buildings.

Soils covered with asphalt and/or concrete planned for removal may contain petroleum based materials from leaking equipment parked on these structures. Oils/tars may have seeped into the soil from the asphalt surfaces. These areas are included in the planned hazardous material survey to be completed prior to contract award.

Fairchild AFB have policies in place for reporting to regulatory agencies, safe handling and disposal of hazardous and non-hazardous solid waste for contractors. Contractors are required to complete abatement plans and to follow all AF policies and state and federal regulations pertaining to abatement, safe handling and disposal.

3.11 ENVIRONMENTAL JUSTICE

3.11.1 Definition of Resource

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (Environmental Justice)*, was issued to focus the attention of federal agencies on human health and environmental conditions in minority populations and low-income populations. This EO was also established to ensure that, if there were a disproportionately high and adverse human health or environmental effects of federal actions on these populations, those effects would be identified and addressed. The environmental justice analysis addresses the characteristics of race, ethnicity and poverty status for populations residing in areas potentially affected by implementation of the Proposed Action.

In 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (*Protection of Children*), was issued to identify and address anticipated health or safety issues that affect children. The protection of children analysis addresses the distribution of population by age in areas potentially affected by implementation of the Proposed Action.

For the purpose of the environmental justice analysis, minority and low-income populations and the population of children are defined as:

- *Minority Populations*: All persons identified by the Census of Population and Housing to be of Hispanic or Latino origin, regardless of race, plus non-Hispanic persons who are Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other (i.e., non-white) Race or Two or More Races.

- *Low-Income Populations*: All persons who fall within the statistical poverty thresholds published by the U.S. Census Bureau in the Current Population Survey are considered to be low-income. For the purposes of this analysis, low-income populations are defined as persons living below the poverty level ($16,895 for a family of four with two children, adjusted based on household size and number of children), as reported in the 2000 Census. The percentage of low-income persons is calculated as the percentage of all persons for whom the Census Bureau determines poverty status, which is generally a

slightly lower number than the total population since it excludes institutionalized persons, persons in military group quarters and college dormitories, and unrelated individuals under 15 years old.

- *Children*: All persons identified by the Census of Population and Housing to be under the age of 18 years.

The ROI for environmental justice consists of the greater Spokane area within Spokane County, Washington.

3.11.2 Affected Environment

Spokane County population at the time of the 2010 Census was 471,221 (U.S. Census Bureau 2010). Between 2000 and 2010, Washington's population increased by 14 percent. In the same period of time, Spokane grew by 12 percent. The top industry is education, healthcare, and social services. Public administration is the second highest area of industry, regionally. And as would be expected, there is a larger portion of the population in the Spokane area employed by the Armed Forces compared with the State.

In 2008, the unemployment rate for the region was 5.6 percent which was slightly higher than in 2000 at 5.2 percent. Fairchild AFB is the largest employer in the Inland Northwest and employs approximately 2,900 military and civilian employees. The annual payroll of Fairchild AFB to active duty, civilian and retirees is approximately $452 million and it is estimated that Fairchild AFB indirectly creates an additional 2,150 jobs with an estimated total impact to the community of $1 billion annually.

Based on the results of the 2000 Census, areas within and nearest Fairchild AFB have the highest population of African Americans than for the Spokane area or the State. The area southeast of Fairchild AFB had the highest percentage of individuals below the poverty level and the lowest per capita income.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 AIR QUALITY

Air quality at Fairchild AFB could be affected if the proposed demolition activities exceeded the NAAQs or NDAAQs, jeopardized the area's attainment status, or exposed sensitive receptors to increased pollutant concentrations. In order to evaluate air emissions and their impact on the overall ROI, the emissions associated with the project activities were compared to the total emissions on a pollutant-by-pollutant basis for the ROI's 2010 National Emissions Inventory data. ROI data is collected from several monitoring stations located within 12 miles of the project area. Potential impacts to air quality are identified as the total emissions of any pollutant that equals 10 percent or more of the ROI's emissions for that specific pollutant. The 10 percent criterion approach is used in the USEPA's General Conformity Rule as an indicator for impact analysis for nonattainment and maintenance areas. According to the USEPA's General

Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action that has the

Table 4-1. Project Emissions – Proposed Action (CO = carbon monoxide; NOx = nitrogen oxides; SO2 = sulfur dioxide; PM10 = particulate matter less than or equal to 10 microns in diameter; PM2.5 = particulate matter less than or equal to 10 microns in diameter; VOC = volatile organic compounds)

	Criteria Pollutant (tons)					
	CO	**NO_x**	**VOC**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Proposed Action	0.45	.942	.12	0.00	.144	.06
ROI Monthly Emissions - Airway Heights/ Spokane (Lo-Hi range)	11-21	-	-	-	15-147	36-108
Fairchild AFB 2005 Annual Emission Inventory	5	18	9	0	2	2
Percent of averaged ROI /Fairchild 2005 annual emissions	**3/9%**	**-/5%**	**-/1%**	**0%**	**1/7%**	**0/3%**

Source: http://www.ecy.wa.gov/programs/air/EmissionInventory/AirEmissionInventory and www.spokanecleanair.org/air_quality_reports

potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is not required as the Proposed Action occurs within an attainment area.

Potential release of asbestos or other hazardous materials to the air is discussed in Section 4.10. In general, regulations and policies for abatement of asbestos include survey and all required regulatory notifications prior to and protections through containment during removal of friable asbestos against release into the atmosphere. This analysis expects containment to be 100 percent and therefore no release to the atmosphere is expected.

4.1.1 Proposed Action

The air quality analysis included an assessment of direct and indirect emissions from the known activities associated with the Proposed Action at Fairchild AFB that would affect the regional air quality. Emissions from the Proposed Action are either "presumed to conform" (based on emissions levels that are considered insignificant in the context of overall regional emissions) or they must demonstrate conformity with approved SIP provisions.

Emissions for the project period were quantified to determine the potential impacts on regional air quality. Although Spokane County is in attainment of the NAAQS, in order to provide a consistent approach, these emissions were compared to federal conformity *de minimis* and 10 percent thresholds on an individual pollutant basis. Emissions of VOC, NO_x, CO, sulfur oxides (SO_x), and PM_{10} and $PM_{2.5}$ from demolition activities are based upon emission factors from the California Environmental Quality Act Air Quality Handbook (South Coast Air Quality Management District 2007), which is a compilation of USEPA (AP-42) emission factors. The emissions included contributions from construction equipment engine exhaust emissions (i.e., on-site demolition and grading equipment such as excavators, backhoes, and generators), vehicle emissions from on-road work vehicles like dump trucks and personal vehicles used in worker commutes, and fugitive dust emissions (e.g., from demolition as well as from grading and trenching activities). This analysis is based upon an original analysis that was conducted by

Ellsworth Air Force Base for a similar demolition of 8 MSA buildings. The analysis was modified to represent the difference in scale; in that demolition for Fairchild AFB's project represents 60 percent less square footage of building area and six buildings, not eight. Total emissions from their analysis were reduced to reflect the smaller project at Fairchild AFB. Each demolition project was estimated to span a 5-day period, including demolition and material hauling, with grading and landscaping to follow. The emissions, in tons from the Proposed Action, are compared to monthly summer and winter range for monitoring site east of Fairchild AFB representing the high and low range values and emissions as reported in 2005 from Fairchild AFB Emissions Inventory. Estimates are conservatively high.

It should be noted that 2005 emissions from Fairchild AFB contribute a small fraction of the total for the ROI. And, combined annual Fairchild emissions and project emissions generated are below the 100 tons per year *de minimis* and below the 10 percent region federal conformity thresholds set forth in 40 CFR 51 Subpart W. Mitigating factors are that emissions generated by demolition projects are temporary in nature and would end when the project is complete. The project would likely take place in spring through summer when air flow characteristics disperse pollutants not concentrate them. The emissions from fugitive dust (PM_{10} and $PM_{2.5}$) would be significantly less due to the implementation of control measures in accordance with standard demolition practices. For instance, frequent spraying of water on exposed soil during ground disturbance and demolition activities and prompt replacement of ground cover or pavement are standard landscaping procedures that could be used to minimize the amount of dust generated during demolition. Using efficient grading practices and avoiding long periods where engines are running at idle may reduce combustion emissions from demolition equipment.

There are no known receptors within the ROI that could be affected by temporary or seasonal increases in pollutants. No further operational emissions are expected to occur after the proposed project is completed, as the facilities would no longer exist. No new stationary sources or additional personnel would be added to the Base as a result of the proposed project. No changes to the Base's Synthetic Minor Operating permit are anticipated. Thus, no significant impacts to air quality are expected under the Proposed Action.

4.6.2 No Action Alternative

Under the No Action alternative, the facilities would not be demolished. Therefore, there would be no additional demolition emissions or impacts anticipated and emissions in the ROI would remain at or near the baseline levels. No significant impacts to air quality are expected under the No Action alternative.

4.2 NOISE

In this section, noise associated with proposed demolition activities are considered and compared with current conditions to assess impacts. The L_{max} noise metric is referenced because it provides an intuitive measure of actual noise experienced near the worksite, and the L_{dn} metric is used because it allows direct comparison between demolition noise and the noise of aircraft operations in the area. Current noise levels in the MSA were extrapolated from calculations completed for the Ellsworth AFB Environmental Assessment (EA) for their MSA which

estimated current noise levels of their MSA using the Air Force's Noise map computer program. Noise expected to be generated during demolition activities was extrapolated from the Ellsworth EA which used the Federal Highway Administration's Roadway Construction Noise Model (RCNM) (U.S. Department of Transportation 2006). Extrapolation from Ellsworth's EA to this EA is reasonable in that Proposed Action and environmental conditions are similar.

4.2.1 Proposed Action

Primary noise sources during demolition activity would be heavy equipment operation such as earth moving equipment, demolition of concrete either by heavy equipment or jackhammer, and grinding of building materials. Noise levels in the model originated from data developed by the USEPA, and were refined using a standard "acoustical usage factor" to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during the project (U.S. Department of Transportation 2006). For the purposes of modeling, it was assumed that all construction would occur between the hours of 7 a.m. and 5 p.m. (normal working hours). Table 4.2 shows sound levels associated with the operation of typical heavy construction/ demolition equipment.

The RCNM also calculates the L_{dn} noise level that would be generated by all equipment in Table 4-2 operating during a single day. This noise level estimate is conservative in that demolition is typically phased, with different pieces of equipment being used on different days. For this project, a range of points were identified at varying distances from the edge of the project site.

Table 4-2. Equipment Noise Levels

Equipment	L_{max} at 100 Feet (dBA)
Clam Shovel (Dropping)	81
Dozer	81
Excavator	76
Dump Truck	75
Total (All Simultaneous)	81

Source: U.S. Department of Transportation 2006

As shown in Table 4-3, modeled data indicate that noise levels fall below 65 dB L_{dn} at less than 500 feet from the edge of the site.

Table 4-3. Noise Levels at Varying Distances From Site Edge

Distance From Site Edge (in feet)	L_{dn} (dBA)
100	78
200	72
300	68
400	66
500	64

Source: U.S. Department of Transportation 2006

Demolition noise would be noticeable in the immediate vicinity of the project sites because its characteristics are quite distinct from aircraft noise and other noise currently experienced in the

area. The effects would be localized to the area immediately surrounding the project site. Within 500 feet of the project sites, demolition noise would be below 65 dB L_{dn}. Persons exposed to this are mostly construction workers conducting the demolition. Construction workers would be required to wear hearing protection, in accordance with Occupational Safety and Health Administration (OSHA) regulations. Noise generated by heavy trucks during the removal of demolition debris would likely be noticeable along the haul route. The anticipated haul route is through rural and light industrial land use, some of which is used currently by a sand and gravel supplier. Hauling would be expected to be accomplished during normal working hours. Direct noise impacts would not exceed current noise levels from existing uses. Cumulative noise impacts of existing hauling and demolition waste hauling would exceed constancy rates for noise but would be a temporary increase not unlike increases may occur during high periods for gravel haul.

As described in Section 3.2 *Noise*, the Fairchild AFB MSA is currently exposed to aircraft noise between 65 and 80 dB L_{dn}. These noise levels are considered to be conditionally compatible with the current land use in the Fairchild AFB MSA. The long-term acoustic environment and land use compatibility in the Fairchild MSA would not be changed by implementation of the Proposed Action. Noise would be temporary and would be expected to be limited to normal working hours. Direct impacts to workers is mitigated by hearing protection requirements. Direct and indirect noise impacts from haul are transitory and temporary. Cumulative impacts over a short time period would be an increase over average periods of existing gravel truck haul but would be temporary in duration. Transitory and temporary noise increase may cause annoyance but would not cause long lasting impacts to those along haul routes. Thus, no significant impacts from increases in noise are expected under the Proposed Action.

4.2.2 No Action Alternative

Under the No Action alternative, no demolition would occur and noise levels would remain as they are currently. No significant impacts to noise levels are expected under the No Action alternative.

4.3 WATER RESOURCES

Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development.

Analysis of potential impacts to water resources typically includes identification and description of resources that could potentially be affected, examination of the potential effects that an action may have on the resource, assessment of the significance of potential impacts, and provision of mitigation measures in the event that potentially significant impacts are identified.

Criteria for evaluating impacts related to water resources associated with the Proposed Action are water availability, water quality, and adherence to applicable regulations. Impacts are measured by the potential to reduce water availability to existing users, endanger public health or safety by creating or worsening health hazards or safety conditions, or violate laws or regulations adopted to protect or manage water resources. An impact to water resources would

be significant if it would: 1) reduce water availability to, or interfere with the supply of, existing users; 2) create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources; 3) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; 4) threaten or damage unique hydrologic characteristics such as wetland hydrology or water quality; or 5) violate established laws or regulations that have been adopted to protect or manage water resources of an area.

4.3.1 Proposed Action

Wetlands. Two Category III wetlands were delineated by a wetland assessment conducted in May 2011 (Appendix B) which updates the current Fairchild AFB wetlands inventory database (Figure 3.4). Wetlands boundaries were marked on the ground and compared to the Proposed Action. No proposed activities are planned within wetland boundaries but some activities are in close proximity of wetland boundaries. To further minimize potential for adverse impacts to wetlands from adjacent activities, best management practices were suggested by the Wetlands Assessment Report (See Appendix B). These best management practices would be employed by the Proposed Action either through the Storm Water Pollution Prevention Plan or through project design specifications.

Best management practices to minimize potential for adverse affects from adjacent activities include incorporating an adequate distance between the wetland and the ground disturbing activity or a "buffer"; using sediment catchment devices such as silt fences, and incorporating erosion control on bare soils to reduce erosion and sediment potential. Wetland buffers are most effective in protection of habitat structure and function as well as water quality and other water related functions. The Spokane County Critical Area Ordinance (SCCAO) was used as guidance for buffer distances. According to the SCCAO, 150 feet is the standard buffer for Category III wetlands and can be reduced to 60 feet when habitat function is low. In the case of the wetlands near the Proposed Action, 60 feet is an adequate buffer distance. Further reduction of buffer distances are provided for in circumstances where the distance varies but averages the 60 feet or when other engineering controls are employed.

Project activities with the exception of construction of a new fence line are at least 150 feet or more distance from Wetland 11A-31. The new fence line would be placed to the west of the wetland boundary without a buffer for about 30 lineal feet. The Wetland Assessment Report recommended that construction be conducted without use of heavy equipment near the wetland in this section since there is no buffer and it would be difficult to protect the wetland with standard engineering controls such as silt fencing. See Appendix B, *Wetland Assessment Report.*

Building demolition activities and concrete pad removal are planned to take place no closer to Wetland 11A-32 than 40-50 feet with the exception of where asphalt from two road approaches would be removed adjacent to the north and south ends of the wetland. The distance in this area from the wetland would be about ten feet for about ten percent of the wetland perimeter. Silt fencing would be required at all times during project activities and up through vegetation re-establishment to minimize potential for adverse impacts from sedimentation. Upon completion of the demolition, the area would be scarified and hydro-seeded to a naturally, sustainable vegetative cover. Once vegetation cover is established, the silt fences would be

removed. The Wetland Assessment Report offers further detail in placement of silt fences for most effective results.

Potential impacts from sedimentation to water quality of the wetland and runoff storage volume would be substantially reduced by best management practices as described above. Erosion control seeding and re-establishment of vegetative cover of all ground disturbed areas would provide long term erosion and sediment control. The area designated for new fence line is easily accessed from an existing asphalt surface road making it feasible to construct the short section of fence line near Wetland 11A-31 close to the road and away from the wetland boundary without equipment operation at the wetland boundary. No significant impacts are expected to wetlands from the Proposed Action including best management practices as stated.

Surface Water and Storm Water. Potential short term adverse impacts could occur to water quality as result of runoff from bare soil areas. Impacts would remain within the project area or immediately adjacent because of the lack of surface drainage ways in the area. Impacts are easily avoided or minimized by working in the dry season and maintenance of sediment catchment devices, such as silt fences between the project area and drainage ditches, depressions, and wetland buffers. Attention to successful vegetation re-establishment immediately after project completion further reduces the time bare soil from ground disturbance is exposed to erosive forces. This would be accomplished by hydro-seeding on a fresh seedbed prior to the onset of the wet season and well within the growing season.

With best management practices as described, no significant impacts are expected to occur from the Proposed Action. No cumulative effect to the ROI is anticipated due to the lack of surface water connection from the project area to the rest of the watershed.

There is no net benefit or negative consequence to water quantity. The size of the contributing area of the project area is small relative to the watershed size.

A benefit would result from changing impervious, paved and roofed surfaces to pervious soil surfaces by slowing runoff energy and increasing infiltration area.

Groundwater. Short term and long term impacts to water quality could occur from unanticipated oil spills from heavy equipment and from commingling of hazardous substances contained in demolition materials with shallow groundwater. This could occur particularly when footings are removed and if work is conducted in the high water table season. Potential for impacts would be minimized by rapid clean up of oil spills, checking equipment for leaks, avoiding working in groundwater, and avoidance of wetland areas and wetland buffers.

No significant impact is expected to water quality or wetlands as a result of the Proposed Action. A slight and immeasurable positive impact for increased infiltration to groundwater may result from the Proposed Action; the land area is small and this benefit is expected to be immeasurable. No significant impact is expected to water quantity from the Proposed Action; the project area size is too small to have an impact within the ROI.

4.3.2 No Action Alternative

Under the No Action alternative, demolition of facilities would not occur. There would be no change in existing environmental impacts to this resource. Runoff from existing impervious surfaces would continue to contribute more rapid runoff with less dispersed filtration of vegetation to filter sediment. Considering the relative surface area in impervious surface versus pervious surface, the existing condition does not pose a significant impact to water quality or quantity. Overall, no significant impacts to water resources are expected under the No Action alternative.

4.4 GEOLOGIC RESOURCES

Analysis of potential impacts to geologic resources includes impacts to long term soil productivity, unique landforms, and mineral resources. Evaluation of impacts is based upon actions having significant impact to long term scientific benefit and/or historical economic or recreational values.

4.4.1 Proposed Action

The Proposed Action replaces impervious infrastructure with a dryland grass cover. Topsoil would be imported and placed on the area for vegetation re-establishment. Soil productivity would be improved over the existing condition and over time as grass cover becomes established many of the soil biological functions would be restored.

No geologic or mineral resources of significant economic, scientific, historic or recreational value occur within the project area. The Proposed Action would not disturb any geologic or mineral resources. No direct, indirect or cumulative impact would occur.

Landforms have been altered from past development activities; these landforms are abundant elsewhere in the region. The Proposed Action would not alter existing landforms or restore landforms to pre-existing conditions. Thus, no significant impacts to geologic resources are expected under the Proposed Action.

4.5.2 No Action Alternative

Under the No Action alternative, demolition of facilities would not occur. No significant impacts are expected to geologic resources under the No Action alternative.

4.5 BIOLOGICAL RESOURCES

Evaluation of impacts is based upon 1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource, 2) the rarity of a species or habitat regionally, 3) the sensitivity of the resource to proposed activities, and 4) the duration of the impact. Impacts to biological resources are considered to be greater if priority species or habitats are adversely affected over relatively large areas and/or disturbances cause reductions in population size or distribution of a priority species.

4.5.1 Proposed Action

The project area is located adjacent and north of a 700 acre area of open space, some of which is

in a near natural state managed for wildlife, plant, and wetland conservation. Under the Proposed Action, removal of six MSA buildings and associated pavements provide an opportunity to restore an area about 2 acres to dryland grass. The MSA area is fenced which excludes some terresterial species from the area. After project completion and the result of new fence placement, the project area would be excluded from the MSA and become open space. The restored area is not large enough to anticipate a rebound in use by species known to occur in the vicinity. An existing main vehicular travel route for the 336th SERE Training Group and their training operations would continue to maintain human activity. Species adapted to human activity are expected to use the area exclusive to those that are not.

No habitat for animal or plant species listed, proposed for listing, or candidates for listing as threatened and endangered in accordance with the ESA of 1973 (87 Stat. 884, as amended; 16 USC 1531 *et seq.*) or state-protected species exists within the project area (FAFB 2005). Thus, no direct impact to these species or indirect or cumulative impact to their habitat would occur as a result of the Proposed Action.

An osprey nest is located about 335 feet from the project boundary just west of the MSA fence boundary and near a main access road. The nest has been observed for over ten years bearing offspring most years which indicates the osprey are habituated to human activity. Daily helicopter flights, parachute jumps, and vehicular traffic are routine disturbances in the area. Habituation is consistent with observations elsewhere in the northwest. "Osprey are known to habituate to human activity and individuals that initiate nesting in or near areas frequented by humans may be more tolerant of subsequent human activities." (ODFW 2011). Activities that are initiated during incubation and early nesting are most disturbing than activities initiated prior to nesting or are ongoing. General protection guidelines by wildlife regulatory agencies are to avoid initiating disturbing activities during the nesting season and new roads and structures should not be constructed within 300 feet of a known osprey nest tree. The proposed project area is about 335 in distance away from the nest and operations are likely to be completed prior to the nesting period (i.e., planned contract award is for September 2011, contract length to not exceed 180 days, and no winter exclusion for operations). Because osprey are listed as a monitor species (no regulatory status) by Washington Department of Fish and Wildlife and protected under the Migratory Bird Treaty (MBTA) Act, the proposed project was discussed with the U.S. Fish and Wildlife Service (USFWS) Regional MBTA Coordinator and local USFWS Endangered Species Coordinator. These discussions guided that no formal consultation is necessary and confirmed that the proposed project is not likely to adversely affect the osprey due to distance of the nest from the project area, timing of the project, and history of existing habituation.

Wetlands in the project area have a low rating for habitat function according to the wetland delineation rating system (See Appendix C: *Wetland Delineation Report*). Low function rating empirically indicates a lower relative risk for affects to habitat compared to a wetland that has a high function rating. The Proposed Action avoids direct impact to habitat function by avoiding activities within the wetland boundary. Indirect adverse impacts to habitat are minimized from activities adjacent to wetlands through engineering controls to minimize sediment, i.e., silt fencing and erosion control seeding. There may be a short term impact to habitat use adjacent to the project due to noise and increased human activity. Duration of this impact is expected to last no more than 180 days. The potential impact is insignificant considering there is over 200 acres

of higher quality wetlands south of the project area for mobile species to use. Less-mobile species such as salamanders may displace from Wetland 11A-32 to Wetland11A-31 which has a physical distance from project activities of at least 180 feet.

In summary, disturbance from project activities are short duration and are expected to be completed prior to migratory bird nesting season. The project area is small relative to available habitat for both terrestrial and avian species south of the project area. No federally-listed or state-listed species are known to use the area. Measures to minimize sedimentation and erosion required by the Storm Water Pollution Prevention Plan (SWPPP) is expected to adequately protect wetlands and water quality. No activities are planned within wetland boundaries. Restoration of the area to dry land grass and open space land use is expected to have a small beneficial but immeasurable effect on biological resources and habitat function. Thus, no significant impacts to biological resources are expected under the Proposed Action.

4.5.2 No Action Alternative

Under the No Action alternative, demolition of facilities would not occur. No significant impacts to biological resources are expected under the No Action alternative.

4.6 CULTURAL RESOURCES

A number of federal regulations and guidelines have been established for the management of cultural resources. Section 106 of the NHPA, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties. Historic properties are cultural resources that are listed in, or eligible for listing in, the NRHP. Eligibility evaluation is the process by which resources are assessed relative to NRHP significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Under federal law, impacts to cultural resources may be considered adverse if the resources have been determined eligible for listing in the NRHP or have significance for Native American groups.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; or neglecting the resource to the extent that it deteriorates or is destroyed. Direct impacts are assessed by identifying the types and locations of proposed activity and determining the exact location of cultural resources that could be affected. Indirect impacts result primarily from the effects of project-induced population increases.

4.6.1 Proposed Action

Consultation with the Washington SHPO, in compliance with Section 106 of the NHPA (16 USC §470 *et seq.*) with its implementing regulations (36 CFR Parts 60, 63, and 800) was completed after the last installation cultural inventory. At that time, SHPO determined that buildings listed for demolition in the Proposed Action are not culturally significant. No other archaeological or traditional resources have been identified nor are they likely to be identified at some future date

in the proposed project area.

Areas that would be disturbed by demolition activities have already been disturbed during the initial construction and operation of these facilities. If archaeological resources are inadvertently discovered during demolition, all work would halt at that location; the Base Cultural Resource Manager (CRM) would be notified; and proper procedures for the discovery of unanticipated resources would be completed prior to work resuming.

Thus, no significant impacts to cultural resources are expected under the Proposed Action.

4.6.2 No Action Alternative

Under the No Action alternative, no facilities would be demolished. Resources would continue to be managed in compliance with federal law and Air Force regulation. No significant impacts to cultural resources are expected under the No Action alternative.

4.7 INFRASTRUCTURE AND UTILITIES

Effects on infrastructure are evaluated based on their potential for disruption or improvement of existing levels of service and additional needs for energy, water, sewer, wastewater, and transportation.

4.7.1 Proposed Action Alternative

The Proposed Action decommissions utility services and removes aging building infrastructure. The water and wastewater mains would be cut and capped at the mains, and removed. Soils would be examined for spills or signs of contamination from wastewater and remediated as needed. Underground electricity will be abandoned. Overhead wires will be removed. Light fixtures will be removed and disposed, appropriately containing any hazardous materials for proper disposal. Other services would be abandoned in place or removed. This would require temporary outage of services to buildings occupied by personnel nearby.

Temporary impacts would occur as an inconvenience to nearby offices as a result of service outages required during decommissioning of services. Long term beneficial effects would occur as use of energy would decrease as demand from buildings is removed and finances to maintain aging infrastructure and utility services are no longer expended. Considering the existing low demand for services from these MSA buildings, the relative positive benefit is small. A higher benefit is from reducing long term costs to maintain and/or upgrade aging infrastructure.

Main roads would remain open. Access to remaining buildings within the MSA would continue during and after project completion. Thus, no significant impacts to infrastructure and utilities are expected under the Proposed Action.

4.7.2 No Action Alternative

All Fairchild AFB infrastructure conditions would remain the same as existing. No significant impacts to infrastructure and utilities are expected under the No Action alternative.

4.8 LAND USE RESOURCES

The methodology to assess impacts on individual land uses requires identifying those uses, as well as affected land use planning and control policies and regulations, and determining the degree to which they would be affected by the proposal.

4.8.1 Proposed Action Alternative

Implementation of the Proposed Action would be consistent with the Base General Plan. The demolition of facilities would eliminate structures that no longer provide useful function to Fairchild AFB and contribute toward national Air Force objectives to "Right Size" by reducing infrastructure by 20%. The Proposed Action restores about 2 acres making the area available for open space or for other industrial uses as needed in the future. This may allow for adjustment of the safety clear zone for the MSA which creates greater flexibility in land uses adjacent to the MSA.

Thus, no significant impacts to present or future land uses are expected under the Proposed Action. A beneficial effect would occur as a result of the Proposed Action by contributing to the "Right Size" objective and by converting an area of underutilized aging infrastructure to area available for needs of the future..

4.8.2 No Action Alternative

Without removal of facilities, redevelopment opportunities would not be created, "Right Size" objectives would not be met, and the benefit of reducing ongoing and future maintenance costs would not occur. The overall impact to available land area for future land use is insignificant under the No Action alternative. Effective siting of new MSA operations may be impacted by deficient land area adjacent to current operations under the No Action alternative. Maintenance for underutilized and aging MSA buildings may impact more urgent maintenance needs elsewhere or lack of maintenance would allow further deterioration. Both of these impacts may become significant over time under the No Action alternative.

4.9 SAFETY

Impacts to safety are assessed according to the potential to increase or decrease safety risks to personnel, the public, and property.

4.9.1 Proposed Action

Implementation of the Proposed Action would involve ground activities that may expose workers performing demolition to some risk. The Department of Labor, Bureau of Labor Statistics maintains data analyzing fatal and non-fatal occupational injuries based on occupation. Due to the varying range of events classified as non-fatal injuries, the considerations described below focus on fatal injuries since they are the most catastrophic. Data are categorized as incidence rates per 100,000 workers employed (on an annual average) in a specific occupation.

To assess relative risk associated with this proposal, it was assumed that the industrial

classifications of workers involved are the Construction Trades. Based on Department of Labor data for calendar year 2006, the probability of a fatal injury was 10.8 per year out of 100,000 employed (U.S. Department of Labor, Bureau of Labor Statistics 2008). Although DoD guidelines for assessing risk hazards would categorize the hazard category as "catastrophic" (because a fatality would be involved), the expected frequency of the occurrence would be considered "remote" (DoD 1993). Strict adherence to all applicable occupational safety requirements including the requirement for contractor's to submit a site specific safety and health plan would further minimize the relatively low risk associated with these construction activities.

A Hazardous Materials Survey (HAZMAT) to survey for remnant explosives and environmental hazards in soils and in buildings would be conducted prior to the beginning of the project so that safe handling and disposal of materials and safety procedures for workers is incorporated into project implementation. In the event that anticipated hazards are discovered during the project, contractual provisions are included for projects involving ground disturbance and demolition of older structures requiring contractors to cease work and report discovery of unknown, known, or suspicious hazards.

The Proposed Action would reduce the MSA area and allows for a reduction of the safety clear zone, around the MSA. The absence of aging buildings and infrastructure with known environmental hazard in construction materials would improve safety and occupational health.

Thus, no significant impacts to project workers, the environment, employees at Fairchild AFB, or the public at large are expected under the Proposed Action.

4.9.2 No Action Alternative

No change occurs in the existing work environment for either Fairchild AFB personnel or construction workers. No significant impacts to human safety are expected under the No Action alternative.

4.10 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

This section addresses the potential impacts caused by hazardous materials and waste management practices and the impacts of existing contaminated sites (e.g., ERP or Military Munitions Response Program) on the Proposed Action.

The qualitative and quantitative assessment of impacts from hazardous materials and solid waste management focuses on how and to what degree the alternatives affect hazardous materials usage and management, hazardous waste generation and management, and waste disposal. A substantial increase in the quantity or toxicity of hazardous substances used or generated would be considered potentially significant. Significant impacts could result if a substantial increase in human health risk or environmental exposure was generated at a level that could not be mitigated to acceptable standards.

Regulatory standards and guidelines have been applied in evaluating the potential impacts that may be caused by hazardous materials and wastes. The following criteria were used to identify

potential impacts:

- Generation of 100 kilograms (or more) of hazardous waste or 1 kilogram (or more) of an acutely hazardous waste in a calendar month, resulting in increased regulatory requirements.

- A spill or release of a reportable quantity of a hazardous substance as defined by the USEPA in 40 CFR Part 302.

- Manufacturing, use, or storage of a compound that requires notifying the pertinent regulatory agency according to Emergency Planning and Community Right-to-Know Act.

- Exposure of the environment or public to any hazardous material and/or waste through release or disposal practices.

4.10.1 Proposed Action

Hazardous Materials

Demolition of the facilities may require the use of hazardous materials by contractor personnel for equipment maintenance. In accordance with the Base's Hazardous Materials Pharmacy (HAZMART) procedure, all hazardous substances brought on to the Base must be reported and copies of Material Safety Data Sheets must be provided to the Base and maintained on the demolition site. Demolition contractors would be required to comply with federal, state, and local environmental laws.

All hazardous materials would be handled, stored, and disposed of in accordance with federal, state, and local regulations and laws. Permits for handling and disposal of hazardous material are the responsibility of the contractor. Hazardous materials would not be stored on Base. All hazardous materials used at the demolition site including, but not limited to, paint, paint thinners, gasoline, diesel, oil and lubricants would be removed daily. Only quantities of hazardous materials required to carry out the work for the day would be permitted on site.

Hazardous Waste

It is expected that building materials, sewer line, and heating ducts may contain asbestos or lead. Lighting fixtures may contain mercury. Floors, walls, sumps, and other drainage structures may have chemical or petroleum contamination from old spills, particularly in buildings used as workshops. Explosive residuals may either be in the form of munitions or in the dust layers in buildings. A HAZMAT survey to identify asbestos and lead based paints, building dust with hazardous contaminants, explosive residuals, and contaminated soils and surfaces is planned prior to beginning demolition work. Appropriate procedures in accordance with regulations would be outlined in *Hazardous Waste Abatement Plans* based upon survey findings. Demolition and disposal would be conducted to control environmental exposure, for safe handling by contractors, and all hazardous materials will be disposed of in an appropriately as approved by AF and/or regulatory agencies.

Generations of appreciable amounts of hazardous wastes are not anticipated and proper handling required by AF policies and regulatory agencies deem that no significant adverse environmental consequences are expected. Any soil or surface suspected of contamination, discovered during the demolition process, would be tested and either replaced back into the excavation or disposed of in accordance with proper state and federal regulations.

Soils containing high levels of metals (arsenic, beryllium, lead, chromium) and VOC's (specifically chloroform) were identified adjacent to the project area associated with a UST (ERP Site RW-11). Preliminarily investigations have determined the area of contamination to be localized to the storage tank area and access is restricted by a fence enclosure. Construction of the new fence is expected to not encounter contaminated soils from this ERP site. To further assure that hazardous materials are identified and properly abated, under general contract provisions, the contractor would be required to maintain awareness of potential hazards, cease work and report any unidentified and suspected hazardous materials. If environmental or safety hazards are identified, the following regulations would apply:

- *Asbestos Removal and Disposal*. Upon classification as friable or non-friable, all waste ACM should be contained, disposed of and transported in accordance with the Washington state regulations governing Transportation of Hazardous Materials.

- *Lead-Based Paint Removal and Disposal*. The proposed project should comply with the U.S. Department of Labor, OSHA regulations.

- Disposal and handling of other hazards and soil contaminants would be on a case by case basis as instructed and approved by 92 Civil Engineering.

In the event of fuel spillage during demolition, the contractor would be responsible for its containment, clean up, and related disposal costs. The contractor would have sufficient spill supplies readily available on the pumping vehicle and/or at the site to contain any spillage. In the event of a contractor related release, the contractor would immediately notify the 92nd Civil Engineering Office and take appropriate actions to correct its cause and prevent future occurrences.

Environmental Restoration Program

There are no ERP Sites identified within the project area. Preliminary investigations of ERP Site RW-11, located near the project area, was determined to have no contamination crossing into the project area.

Non-Hazardous Solid Waste

Demolition of the six facilities and associated pavement would generate solid wastes consisting of concrete, asphalt, brick, wood, structural steel, glass, and miscellaneous metal building components. The total amount of demolition waste generated is estimated to be approximately 1800 tons using a standard USEPA estimate of pounds of debris per square foot of building demolition. Demolition contractors would be directed to recycle materials to the maximum extent possible, thereby reducing the amount of demolition debris disposed in landfills.

Materials not suitable for recycling would be taken to a landfill permitted to handle construction debris wastes. Nearby construction and debris landfills have capacity to accept the waste generated by the Proposed Action and would not have a significant impact to the operating lives of the landfills.

Best practices to assure human safety and to avoid adverse environmental effects from hazardous materials and waste and non-hazardous waste would be applied throughout the project. Practices and actions would be in accordance with all state and federal regulations. No significant direct, indirect, or cumulative effects would occur under these measures. Under a worse case scenario where measures are not followed, there is risk of a significant direct effect to human health and safety and adverse environmental impact. Project monitoring would provide assurance that all regulations and safety procedures are understood and followed. There is no reason to anticipate there would be a worse case situation as a result of this Proposed Action.

Thus, no significant impacts from hazardous materials are expected under the Proposed Action.

4.10.2 No Action Alternative

Under the No Action alternative, demolition of the facilities would not occur. No significant impacts from handling or disposing of hazardous materials are expected under the No Action alternative. No beneficial impacts are expected in reducing potential hazardous material are expected under the No Action alternative.

4.11 ENVIRONMENTAL JUSTICE

In order to assess environmental justice for populations of concern (E.O. 12898 and E.O. 13045), community and county figures are compared to regional and state demographics to determine proportional differences. Fairchild AFB employs a disproportionate share of minorities compared with Spokane County population. And typically, contract workers reflect the average ratio of minorities in the general population of Spokane County if not slightly less. The nearest concentration of low income housing is about 2 miles away in Airway Heights and to the south 3-5 miles near Medical Lake.

4.11.1 Proposed Action

The Proposed Action including mitigation measures is not expected to create significantly adverse environmental or health impacts to humans, in the short or long term, directly, indirectly, or cumulatively. Distance from the MSA of residential or industrial areas within the boundary of Fairchild AFB or outside the boundary where concentrations of minorities, low income residents, or any areas with large concentrations of children, such as schools or daycares is far enough removed to reduce interactions that would place human health at risk. The MSA is a restricted area to unauthorized personnel. Areas in which demolition would occur would be restricted, to effectively bar any person, including children, from unauthorized access. Hazardous haul materials would be contained and covered.

Thus, no significant impacts to populations of concern (E.O. 12898 and E.O. 13045) are expected under the Proposed Action.

4.11.2 No Action Alternative

Under the No Action alternative, demolition of facilities within the MSA would not occur. Thus, no significant impacts to populations of concern are expected under the No Action alternative.

5.0 CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

This section provides (1) a definition of cumulative effects, (2) a description of past, present, and reasonably foreseeable actions relevant to cumulative effects, (3) an assessment of the nature of interaction of the Proposed Action and alternatives with other actions, and (4) an evaluation of cumulative effects potentially resulting from these interactions.

5.1.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis within an EA should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Recent CEQ guidance in *Considering Cumulative Effects* affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the proposed action and alternatives. The scope must consider geographic and temporal overlaps and must also evaluate the nature of interactions among these actions.

Cumulative effects are most likely to arise when a relationship or synergism exists between a proposed action and alternatives and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than actions that may be geographically separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher potential for cumulative effects.

In this EA, an effort has been made to identify all actions that are being considered and that are in the planning phase at this time. To the extent that details regarding such actions exist and the actions have a potential to interact with the Proposed Action in this EA, these actions are included in this cumulative analysis. This approach enables decision makers to have the most current information available so that they can evaluate the environmental consequences of the Proposed Action.

The potential adverse impacts to resources of interest addressed in this EA are short term and minor; it is anticipated that planned mitigation measures would minimize unforeseen impacts and minimize further those anticipated.

5.1.2 Past, Present, and Proposed Actions Relevant to the Proposed Action and Alternatives

Fairchild AFB is an active military installation that undergoes continuous change in mission and training requirements. The MSA is located in an isolated area of the Installation and is on the northern edge of a large area of unimproved lands. Thus most of the activities north of the MSA in the developed part of the base have little interaction with the MSA. The following activities are ongoing or planned in the future at the Installation and share, for some resources, a common ROI as the Proposed Action.

- Current runway renovation with planned completion in November 2011.
- Future Remodel or New Construction at the MSA to meet future mission requirements. The extent of this activity is low and the timeline is unknown.
- Current 336th SERE Training Group Phase I and Phase II Mission Support Facility construction with a planned completion in 2012. Building site is approximately .5 miles west of the MSA.
- In 2005, a new buried utility line was place just south of the road prism along Patrol Road adjacent to wetlands to the south of the road. The new line is .08 miles to the south of the MSA demolition project area.
- Privatization of military housing at Fairchild AFB is underway. The effort has included old housing demolition and remodeling with some new residential construction. Most, if not all of the demolition has been completed.
- Spokane Rock Products Sand and Gravel operations conducted about 1 mile to the north east of the MSA.

5.1.3 Analysis of Cumulative Effects

The Proposed Action covers a project area less than 3 acres. The duration of the Proposed Action is about 1-3 months. Entry to the MSA is restricted to authorize personnel. Historic activities at the MSA incurred extensive land and habitat alteration and/or disturbance. The Proposed Action represents in proportion an immeasurable amount of activity relative to historic activities. The project overall poses relatively insignificant potential impact to air and water resources, land use, geologic resources, and biological resources. When added to ongoing or future activities the Proposed Action represents an insignificant if not immeasurable effect over a very short duration to overall impact of concurrent activities.

The currently ongoing Runway Renovation project at Fairchild AFB has impacts to air quality; impacts are mitigated with dust control. The project would be completed before the MSA demolition begins so there would be no overlap of air quality impact. Ongoing sand and gravel operations by Spokane Rock Products would overlap with the MSA project. Analysis in Section 4 demonstrates there is a large margin for increase in dust pollutants prior to reaching air quality thresholds within the region which makes for an adverse cumulative impact unlikely. The potential increase in demand for capacity for transportation systems to haul and disposal of

materials, both hazardous and non-hazardous, from concurrent demolition of MSA buildings and residences under the privatization program is reduced as overlap of these projects is not expected. There are no identified known concerns with regard to landfill capacity in the area. NO_x pollution, which is a trigger for threshold concerns in the Spokane area, could exceed the 10% increase threshold over average background levels for the West Plains if haul volumes from Spokane Rock Products and demolition projects were substantial when combined with commuter traffic. Haul is anticipated to be rather insignificant for six buildings ranging from 700-4000 square feet. Haul from Spokane Rock Products is dispersed throughout the construction season and would not be considered at a rate to substantially impact NO_x.

Installation of the buried water line adjacent to existing wetlands about .08 miles south of the MSA in 2006 is the only project in recent history with potential to affect wetlands. The greatest concern is extensive ground disturbance adjacent to wetlands that could be a conduit for the introduction of weedy plant species. Vegetation in the pipeline area has completely recovered to vegetation consistent with surrounding area with no bare soil areas so there should be no overlap for this concern.

The 336th SERE Training Phase II construction is likely to overlap with the Proposed Action schedule. These activities are within 1/2 mile of each other. No significant impacts were identified for this project. Combined, there is no reason to expect a significant cumulative effect from these two projects.

No cumulative impacts either concurrent nor over the long term or over a large scale would occur to surface waters on Fairchild Air Force Base due to the lack of connection to surface water ways.

Evaluation of noise levels of individual projects suggest that cumulatively, several projects would remain under thresholds established for human health and safety.

The General Installation Plan assures land uses are evaluated on an Installation scale to avoid long term conflict in land use and to assure responsible natural resource management. The land base has about 700 acres that are currently undeveloped and are classified as "*open area*". Of this open area, 212 acres are wetland area which leaves about 488 acres available for training and infrastructure development.

The No Action alternative represents status quo conditions and would not represent any change from the existing environment.

5.2 UNAVOIDABLE ADVERSE IMPACTS

Analysis discussion in Section 4.0 determines that no unavoidable adverse impacts would occur as a result of the Proposed Action.

5.3 RELATIONSHIP BETWEEN SHORT-TERM USES AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short-term effects would be those associated with the activities during demolition of buildings as well as the no action alternative. Implementation of the Proposed Action has the potential to not diminish but enhance long-term productivity of the environment by removing impervious surfaces and restoring topsoil and natural vegetative cover. This favors increase in infiltration of storm water resulting in improved regulation and discharge to the aquifer and promotes long term soil productivity.

5.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of "...any irreversible and irretrievable commitments of resources; which would be involved in the Proposed Action should it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resource and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site). The use of energy, labor, and fuel for operation of equipment would represent an irretrievable commitment of resources. Land fill capacity is a limited resource and non renewable for materials that do not decompose over time.

For the Proposed Action, most resource commitments are neither irreversible nor irretrievable. The Proposed Action would use gasoline and diesel fuel in vehicles and heavy equipment during demolition and hauling of waste materials and utilize land fill capacity. None of these activities would be expected to significantly decrease the availability of minerals or petroleum resources or land available for waste disposal.

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7.0 LIST OF PREPARERS

Joni L. Sasich, Natural Resource and NEPA Specialist. B.S., Soil Science. Montana State University, Bozeman, MT, Years of experience: 30.

Jessica Wood, 2d LT. Deputy Element Chief, Asset Optimization, Fairchild AFB, Spokane, WA. Years of experience: 4

Jonathan Wald. Chief, Asset Optimization. Fairchild AFB, Spokane, WA. Years of experience: 10

8.0 LIST OF CONTACTS AND PERSONS CONSULTED AND/OR PROVIDED COPIES

The following Fairchild AFB personnel were consulted during the preparation of this Environmental Assessment:

- Kristen Nester, Chief, Natural Resources Assets Manager, 92 Civil Engineering Squadron, Fairchild AFB
- Mary Baker, Real Estate, 92 Civil Engineering Squadron, Fairchild AFB
- Steve Selzer, Natural Resource Program Manager, 92 Civil Engineering Squadron, Fairchild AFB
- Marc Connally, ERP Program Manager, 92 Civil Engineering Squadron, Fairchild AFB
- Lee Paul and Staff, Civil Engineering, 92 Civil Engineering Squadron , Fairchild AFB
- Michael Green, MBTA program manager, U.S. Fish and Wildlife Service, Portland, OR
- Michelle Eames, U.S. Fish and Wildlife Service, Spokane, WA
- Carrie Cordova, U.S. Fish and Wildlife Service, Spokane, WA

The following agencies/persons were provided notification or copies of this EA for review and comment:

U.S. Fish and Wildlife Service
Eastern Washington Field Office
11101 East Montgomery Drive
Spokane, Washington 99206

WA State Department of Fish and Wildlife
2315 North Discovery Place
Spokane Valley, WA 99216

State Historic Preservation Office
Suite 106
1063 South Capitol Way
Olympia, WA 98501

A 30 day period was available for review and comment. A public notice was published on the Fairchild AFB website and made available to the *Spokesman Review*. The EA was available for public review at the Fairchild AFB Library and electronically, by request.

Appendix A Air Quality Background Data

Appendix A

1. Emission factors are from the South Coast Air Quality Management District offroad emission factor tables for the year 2007, http://www.aqmd.gov/ceqa/handbook/offroad/offroad.html (South Coast Air Quality Management District 2008).
2. Assumed composition emission factors for each equipment type.
3. $PM_{2.5}$ emission factors were calculated following the South Coast Air Quality Management District Particulate Matter (PM) 2.5 Significance and Calculation Methodology (South Coast Air Quality Management District 2006).

Construction Equipment	Emission Factors (lbs/hour)					
	VOC	CO	NOx	SOx	PM10	PM2.5
Front-end loader	0.173	0.5552	1.382	0.0012	0.0776	0.069
Small excavator	0.1816	0.5977	1.4225	0.0013	0.0776	0.069
Medium excavator	0.1816	0.5977	1.4225	0.0013	0.0776	0.069
Large excavator	0.1816	0.5977	1.4225	0.0013	0.0776	0.069
Dozer	0.3789	1.695	3.4143	0.0025	0.1474	0.1312
Backhoe	0.1307	0.4142	0.8303	0.0008	0.0639	0.0569
Bobcat-style loader	0.173	0.5552	1.3821	0.0012	0.0768	0.0684
Crane	0.1882	0.6365	1.6948	0.0014	0.0755	0.0672
Generator	0.113	0.3549	0.7249	0.0007	0.0446	0.0397

Vehicle Type	**Emission Factors (lbs/mile)**					
	VOC	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Passenger car	0.001383	0.01282	0.001361	0.000009	0.00008	0.000074
Delivery truck	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424
Dump truck	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424
Water truck	0.002608	0.017455	0.024978	0.000033	0.00044	0.000424
Pickup	0.001383	0.01282	0.001361	0.000009	0.00008	0.000074

Total Construction Equipment Emissions: Ellsworth AFB Munitions Buildings Demolition EA								
			Emissions (lbs/day)					
Construction Equipment	**Quantity**	**Hours per Day**	**VOC**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Front-end loader	1	4	0.69	2.22	5.53	0.00	0.31	0.28
Small excavator	2	4	1.45	4.78	11.38	0.01	0.62	0.55
Medium excavator	1	4	0.73	2.39	5.69	0.01	0.31	0.28
Large excavator	1	8	1.45	4.78	11.38	0.01	0.62	0.55
Dozer	2	4	3.03	13.56	27.31	0.02	1.18	1.05
Backhoe	1	4	0.52	1.66	3.32	0.00	0.26	0.23
Bobcat-style loader	1	4	0.69	2.22	5.53	0.00	0.31	0.27
Crane	1	4	0.75	2.55	6.78	0.01	0.30	0.27
Generator	2	10	2.26	7.10	14.50	0.01	0.89	0.79
Daily Totals			9.32	34.16	76.92	0.06	3.91	3.48
Building Totals			46.61	170.79	384.61	0.32	19.53	17.38
Construction Emissions Total			559.37	2049.50	4615.27	3.86	234.38	208.54

Appendix A

Appendix B Wetland Assessment Report

Inland Northwest
Resources, LLC

Inland Northwest Resources, LLC
15304 W. Jacobs RD Phone: 509-244-9946
Spokane, WA 99224

Wetland Report

Munitions Storage Area Demolition Project, Fairchild Air Force Base Spokane County, Spokane, WA

Prepared for: Jonathan Wald, 92nd CES/CEAO
Fairchild Air Force Base
Spokane, WA 99011
phone: 509-247-8207

Prepared by: Joni Sasich, Certified Professional Soil Scientist (CPSS) and Wetland Specialist
Inland Northwest Resources, LLC
15304 W. Jacobs RD
Spokane, WA 99224
phone: 509-244-9946

MAY 2011

Appendix B

1.0 Executive Summary

A wetland assessment was conducted in the Munitions Storage Area (MSA) at Fairchild Air Force (AFB) on May 24, 2011 to determine wetland category ratings, wetland boundary, and a recommended buffer for wetland protection in preparation for planning to demolish six small buildings, access roads, and concrete pads surrounding the buildings. A new fence line will be constructed.

Three wetlands were indicated on the Fairchild AFB wetlands inventory map within the potential influence of the proposed project. Delineation resulted in the following:

- Wetland 11A-23 does not meet jurisdictional requirements for wetlands; failing vegetation, soils, and hydrology requirements. The recommendation is to remove this wetland from the inventory.
- Wetland 11A-32 meets the jurisdictional test for wetlands, classifies as Category III wetland, and is within the bounds of the project area. No map adjustment to the boundary is necessary.
- Wetland 11A-31 meets the jurisdictional test for wetlands for a portion of the area mapped. The northern half does not meet the jurisdictional test and was excluded from delineation. The northern non-wetland area meets hydrophytic vegetation criteria but not soils or hydrology criteria, thus, does not qualify as a jurisdictional wetland. The wetland area classifies as Category III.

Wetland classification ratings were determined using the State of Washington Wetland Rating Classification for Eastern Washington (Hruby 2004). Wetlands scores resulted in high values for water quality function and low functional value for wildlife habitat and hydrology.

The project area is within an area with a history of land alteration likely prior to the Base origination and then during the development of the MSA in the 1950's. The wetlands in and near the project area occur in drainage ditches likely created to concentrate and confine much more extensive wetland hydrology for development purposes. Since alteration pre-dates the Clean Water Act, only those areas currently qualifying as jurisdictional wetlands are under regulatory protection.

Delineation of Wetland 11A-32 measures about .1 acre and supports persistent emergent and shrub-scrub vegetation including smooth rush, cattail, and willow. Flowing water and drift lines of organic matter located above the current water level were observed. Delineation of Wetland 11A-31 measures about .2 acres supports primarily emergent vegetation dominated by cattail. The two wetlands are connected by a road culvert. Hydrology appears to originate from groundwater and seasonal precipitation. They have no surface outlet or inlet. Subsurface hydrologic connection appears likely with wetlands further to the east.

The greatest potential impact to the wetlands is from sediment delivery. Conservation measures or best management practices (BMPs) employed to minimize surface erosion, to trap sediment prior to entry into the wetland, protect from entry of unanticipated oil spills from demolition equipment, and to preserve or enhance vegetation cover around the wetland will provide adequate protect for water quality values and indirectly, wetland

habitat values. An adequate wetland buffer of 60 feet based upon the Spokane County Critical Area Ordinance Section 11.20.050 (C)(1)(c) is recommended and will be exceeded for Wetland 11A-31 and will be met by the building demolition portion of the project for Wetland 11A-32. Demolition of concrete pads around the buildings and two narrow asphalt roads are within the 60 foot buffer and will require additional conservation measures.) The County allows for buffer distance to vary by using an averaged buffer width and/or in certain circumstance be reduced further by the use of conservation measures.) Recommended as conservation measures are to: 1) Place silt fences around the entire perimeter of Wetland 11A-32 upslope from the wetland fringe at least 20-30 feet on the east and west sides and 2-5 feet on the south and north sides where the access roads cross the drainage ditch; 2) avoidance equipment operation or parking within 60 feet of wetlands except where necessary to remove materials, construct the new fence, and for site preparation for vegetation re-establishment; 3) limit ground disturbance within 60 feet of the wetland to only what is necessary to remove concrete and asphalt materials; 4) restore vegetative cover immediately upon completion of the project.

Considering the small size of the wetlands, their existing condition and relative contribution to wetland function compared to other wetlands in the area, the potential for positive benefit of the project by removing impervious surface area, and the effectiveness of conservation measures in minimizing impacts to water quality, it is reasonable to expect wetland values will be protected during the project.

Upon discussion with federal and state wetland regulators it was determined that as long as no project activities occur within the wetland boundary, no regulatory approval is necessary. County guidelines are provided as reference for best management practice methods but are not regulatory in nature. Spokane County does not recognize regulatory authority on federal military lands.

2.0 Site Location

The project area is located in the MSA at Fairchild AFB in Spokane County, Washington within:

North half of Section 4 in Township 25 North and Range 41 East, West Meridian.

The property lies west of the cities of Spokane and Airway Heights and is accessed by Highway 2.

3.0 Methods

Wetlands Areas 11A-31, 11A-32, and 11A-23 were identified by the Fairchild AFB wetland inventory to be within or adjacent to the proposed project area. The wetland inventory is based upon the National Wetland Inventory and updated by Natural Resource Conservation Service in the 1990's and further updated to include condition description in 2005. The original mapping was conducted using aerial photo interpretation while updates had some field verification. (It is likely that field verification may have been limited in the MSA as access is limited to authorized personnel.) Field verification of the inventory and field delineation for the proposed project was conducted on May 24, 2011.

Field delineation was conducted in accordance with the Corps of Engineers 1987 Wetlands Delineation Manual and subsequent guidance including the Arid West Supplement (USACE 2008). Arid West field forms were used for the jurisdictional wetland test.

The precipitation in winter and spring of 2010/2011 has been above average and wetland areas, in general, are larger than have been for the past several years. Wetland indicators were obvious and the routine determination methodology was used.

The boundary between upland and wetland is abrupt with obvious change in wetland/upland indicators. Topography, surface water, and hydrophytic vegetation were primarily used to delineate the wetland boundary once sample plots were completed.

Two areas were suspected to be non-wetland areas. In these areas, soils were examined to at least 20 inch depth in several areas where the array of vegetation was different and where subtle changes in slope configuration occur. At sample points, data for all three criteria were taken and both the 50/20 rule and prevalence index test were conducted to verify non wetland characteristics. Completed field survey forms are in Appendix B.

Wetland boundaries were located by GPS (WAAS enabled, WGS calibrated eTrex Vista HCx) . GPS waypoints were imported into a georeferenced ARCVIEW shapefile and used to identify delineated boundary on 2006 NAIP digital orthographic aerial photography.

Wetland category ratings were determined using the Washington State Wetland Rating System for Eastern Washington (2004), as amended (Hruby 2004). Completed forms are in Appendix B.

Wetland buffer recommendations are based upon criteria in Alternative 3, Spokane County Critical Area Ordinance Section 11.20.050 (C)(1)(c).

4.0 Site Characterization

Geography

The MSA is located in the Upper Columbia River Basin Basalt Geomorphic Province and lies within the Latah Creek watershed. The landtype is prairie pothole. The landscape setting is typically undulating with shallow soils over basalt bedrock with deeper, mounded soils with occasional basalt outcroppings. Wetlands in this environment are typically located in depressions of an undulating landscape or in broad channels between basalt terraces; they range from vernal pools to palustrine ponds and emergent wetland meadows.

The MSA landscape has been altered by a network of elevated roads and flattened bedrock features and fill placement to create flat elevated surfaces rising from the natural land surface. A drainage ditch constructed in native soils and blasted bedrock winds through the property. The ditch is armored with rock ballast.

Land Use

The MSA is located within Fairchild AFB and is presently used for military operations; primarily for storage of munitions and related support operations. Prior to origination of

the Base, a portion of the area was developed for farming. Historical accounts suggest that canals were developed for irrigation some of which remain today.

Hydrology

Natural wetlands in the project area and adjacent area are in depressions. Recharge is from high seasonal water tables and from surface runoff. Runoff is confined in low areas forming either vernal pools or depressional, palustrine wetlands. Seasonally high water tables are common created either by restrictive soil layers or solid bedrock. Shallow water tables are encountered from 5-20 feet in non-wetland areas. Wetlands are isolated from surface stream channels and are removed surface watershed connection. Annual precipitation is about 14 inches with much of the precipitation concentrated in the months between November and June.

At the time of the survey, standing water was observed in depressions and in ditches. Roads appear to dam surface flow exacerbating the lack of surface water dispersion. The MSA has two large wetlands along the eastern boundary and wet areas exist at low areas throughout the MSA. It appears hydrology may have supported a larger complex of wetlands than what exists today and the two wetlands examined in this delineation may be remnants of a larger wetland complex that has been drained and filled. A similar landscape with history of less alteration exists immediately east of the MSA; the area is a large complex of wetlands with large areas of surface water in early spring.

Wetlands 11A-23 and the portion of wetland area within Wetland 11A-31 are confined to ditch drainage ways and, at the time of the field survey, had standing and slightly flowing water. Organic debris drift deposits and water marks are indicative of water levels at least 1 foot higher earlier in the season. The two wetlands are connect by a culvert under the road that bisects the area. Wetland 11A-32 appears to flow toward Wetland 11A-31.

Wetland 11A-23 lacks wetland hydrology indicators. The northern portion of Wetland 11A-31 lacks wetland hydrology indicators.

Soils

The National Cooperative Soil Survey (NCSS) for Spokane County mapped Cheney-Uhlig complex, 0-8 percent slopes in the project area. These soils are deep, have dark silt loam surface layers and light loams or sandy loam subsurface layers with a moderately rapid saturated hydraulic conductivity. Minor included wetland soils are typically Cocollala Series.

The extensive amount of alteration and filling in the area did not warrant extensive upland soils investigation except to verify wetland/non-wetland soils characteristics. Wetland soils were inundated precluding classification in these areas..

Soils in the area mapped as Wetland 11A-23 and the north portion of Wetland 11A-31 have characteristics of Uhlig Series. They lacked seasonal saturation or mottling, indicative of seasonal or prolonged saturation.

The error of including non-wetland areas in the wetlands inventory is understandable when using aerial photo interpretation as the basis for mapping. The loam textures and thicker A horizons high in organic matter typical of the Uhlig Series would retain moisture longer into the growing season whereas Cheney series soils with sandy soil textures do not maintain moisture as long into the growing season. The areas of Uhlig

would show green in contrast with the brown color of Cheney soils on aerial photographs. Wetland soils in the area, such as Cocolalla would appear similar to Uhlig in early summer on aerial photography.

Vegetation

In general, upland vegetation is a low diversity mix of the short prairie bunchgrass community (i.e. Sandberg bluegrass, Idaho fescue, bulbous bluegrass), weeds, and an occasional russian olive tree. The upland component of what was mapped Wetland 11A-31 supports Kentucky bluegrass, serviceberry, Russian olive, mullein, knapweed, and milkweed. The non-wetland area mapped as Wetland 11A-23 supports Idaho fescue, bulbous bluegrass, Sandberg bluegrass, pussytoes, small areas of wild iris and soft rush, and knapweed.

Wetland fringe areas are very narrow (about 1 foot) and are dominated by reed canarygrass, and traces of ash, black hawthorn and red osier dogwood.

The wetland component of Wetland 11A-31 supports emergent vegetation and is dominated by cattails. Wetland 11A-32 supports shrub-scrub vegetation and is dominated by willow. Emergent vegetation components surround the willow and are primarily cattail and soft rush. A more complete vegetation description is included in wetland inventory forms in Appendix B.

5.0 Wetland Identification and Classification

The wetland boundaries for both wetland areas are abrupt due to rise in elevation along the ditch bank. The fringe area is about one foot in width. Wetland criteria were observed with a high level of certainty for vegetation and hydrology and used as inference for saturation of soils.

The wetland areas on Fairchild AFB's map that did not classify as wetland lacked 2 or all three of the wetland criteria. The areas did have some hydric vegetation components but lacked wetland hydrology and hydric soil indicators. It is possible these areas were wetlands or wetland fringe prior to alteration and hydric vegetation is a remnant.

Both wetlands rated Category III using the Washington Wetlands Rating System for Eastern Washington Form. Scores were in the middle of the range for the category with low scores for hydrology and habitat function and a high score for water quality function.

6.0 Potential Impacts of Proposed Project and Wetland Buffer Recommendation

The proposed project will demolish six buildings, remove concrete pads, remove asphalt from access roads, decommission utilities, and construct a new fence.

Wetland 11A-31 and Wetland 11A-32 have potential for impacts by the proposed project. Wetland area 11A-23 and the north half of Wetland 11A-31 have been removed from impact consideration as they do not meet jurisdictional wetland criteria.

The nearest building to be demolished is about 110 feet from Wetland 11A-32 and about 190 feet from Wetland 11A-31. Concrete pads planned for removal are from 40-50 feet away from Wetland 11A-32 and about 130 feet away from Wetland 11A-31. Two asphalt roadways to be removed are less than 10 feet away on both north and south ends of Wetland 11A-32. The new fence will be constructed between an existing road and the western bounds of Wetland 11A-32. The fence line potentially impacts no more than ten linear feet of the wetland perimeter or about one percent of the perimeter. It is anticipated that fence posts will be galvanized metal and be located outside of the wetland area.

Accepted practice to minimize potential impacts to wetlands is to establish a buffer zone around the wetland were activities are restricted. The buffer protects wetland functions by minimizing direct and indirect adverse impacts on water quality, hydrology, and wetland habitat from land uses. The existing condition of the buffer area determines the effectiveness in protection of the wetland. Other accepted management practices are proven to minimize potential impacts and are called best management practices (BMPs). A reasonable approach in determining protection measures is to match the mitigation measure to the existing and future functional value of the wetland.

Wetland habitat and hydrologic functional values for both wetlands were rated low by the State of Washington Wetland Assessment Rating (Hruby 2004) procedure. The highest value scored was for the function of water quality. Hence, the potential for greatest direct impact from the project is to water quality. Previous land alterations in the area have severely impacted hydrologic and habitat function and future uses will continue to maintain low function values for hydrologic and habitat function. The project's potential for further adverse impact to these functions is low. The project may affect a beneficial impact by removing contiguous impervious surfaces that restrict infiltration and that discharge storm water rapidly from their areas without little buffering from vegetated area.

A regionally accepted method of determining buffer distance is available in the Spokane County Critical Area Ordinance (CAO). The standard recommended buffer for a Category III wetland is 150 feet. This distance can be reduced to 60 feet providing the project impact is moderate or low and that habitat function is low (Eastern WA rating assessment <20; Spokane County Critical Area Ordinance 11.20.050 (C)(1)(c)). So the minimum buffer for this project would be 60 feet by Spokane County CAO requirements. Spokane County guides further, that reduction of a buffer can be based upon averaging the width of the buffer allowing for lesser width in some places but more in others and in some circumstances when this is not feasible to utilize certain best management practices in lieu of a conservative buffer.

In order to carry out the project, buffer zone protection such as determined by the Spokane County CAO guidance for Wetland 11A-32 is not possible. Project distance from Wetland 11A-31exceeds the 60 foot buffer except for fence construction. Considering the proposed project has the potential for beneficial effects in reducing runoff, the wetland area is already severely impacted by historic alterations, and existing buffer areas are basically roads and landfill, it seems unmerited to impose buffer limits on the project that would deem the project infeasible. Proven mitigation measures for the purpose of wetland protection are proposed by the project plan and should provide adequate protection for water quality. Mitigation measures (BMPs) proposed by the project are to employ silt fencing to minimize sedimentation and to restore the ground

surface with no less than 3 inches of imported topsoil and to hydro-seed upon project completion. These two BMPs should mitigate both short and long term sedimentation hazard and the risk of impact to water quality.

The following recommendations offer a slight refinement or clarification to further provide wetland protection.

- ***Minimize potential sedimentation to wetland buffer, wetland fringe, and to wetland.*** Placement of silt fences should be upslope from the wetland fringe as far feasible. A conservative distance is 20 feet along the west side of Wetland 11A-32; 2-5 feet along the north and south ends of the wetland; and along the shoulder of the road on the east side of the wetland.
- ***Minimize ground disturbance within the 60 foot buffer.*** Equipment operation, maintenance, and parking should be avoided within the 60 foot buffer area with the exception of operations to remove concrete pads and asphalt roadways and for site rehabilitation.
- ***Avoid direct impact to wetland and wetland fringe***. The project will avoid operations in the wetland area as delineated by blue flagging. This may require several fence posts to be placed without equipment near Wetland Area 11A-31.

7.0 References

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, Washington D.C. , Publication FWS/OBS-79/31.

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Hruby, T. 2004. Washington State wetland rating system for eastern Washington - Revised. Washington State Department of Ecology Publicatin #04-06-15. Oympia, Washington.

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Washington Department of Natural Resources - Natural Heritage Program Reference Desk for Rare Plants, Animals, and Vegetation Communities. http://www1.dnr.wa.gov/nhp/refdesk/index

USDA:NRCS Geospatial Data Gateway. 2011. 2006 NAIP Digital Orthophotographic image. http://datagateway.nrcs.usda.gov/

USDA National Cooperative Soil Survey. Soil Survey of Spokane County, Washington, WEB SOIL SURVEY 1.1 http://websoilsurvey.nrcs.usda.gov

8.0 Delineator's Qualifications

Joni Sasich, CPSS - Inland Northwest Resources, LLC

Certifications:

ARCPACS Certified Professional Soil Scientist

USDA Certified Silvicuturist

WA State Certified Watershed Analyst

Spokane County Wetland Specialist Consultant

Relevant Experience:

17 years natural resource consultant conducting wetlands delineation/valuation and other watershed related services. Wetland delineation experience includes both state and federal jurisdictions.

20 years natural resource management for US Forest Service including watershed program leadership.

Project leader for two completed National Cooperative Soil Surveys.

Landtype mapping and interpretation for over 12 million acres in the Inland Northwest which included interpretation of landscape ecology, geomorphology, hydrology, and silviculture.

Mitigation design, delineation update, condition and valuation rating for wetlands for mitigation banking for wetlands in Shoshone, Spokane, and Bonner Counties.

Relevant Recent Training:

Advanced Wetland Soils and Hydrology for Delineators, Portland State University, 2003
Identification of Wetland Plants in the Northwest, Portland State University, 2003Wetland Delineation, Eastern Washington University, 2000

Appendix A Wetlands Maps

Figure 1. Fairchild AFB Wetlands Inventory in Munitions Storage Area (MSA)

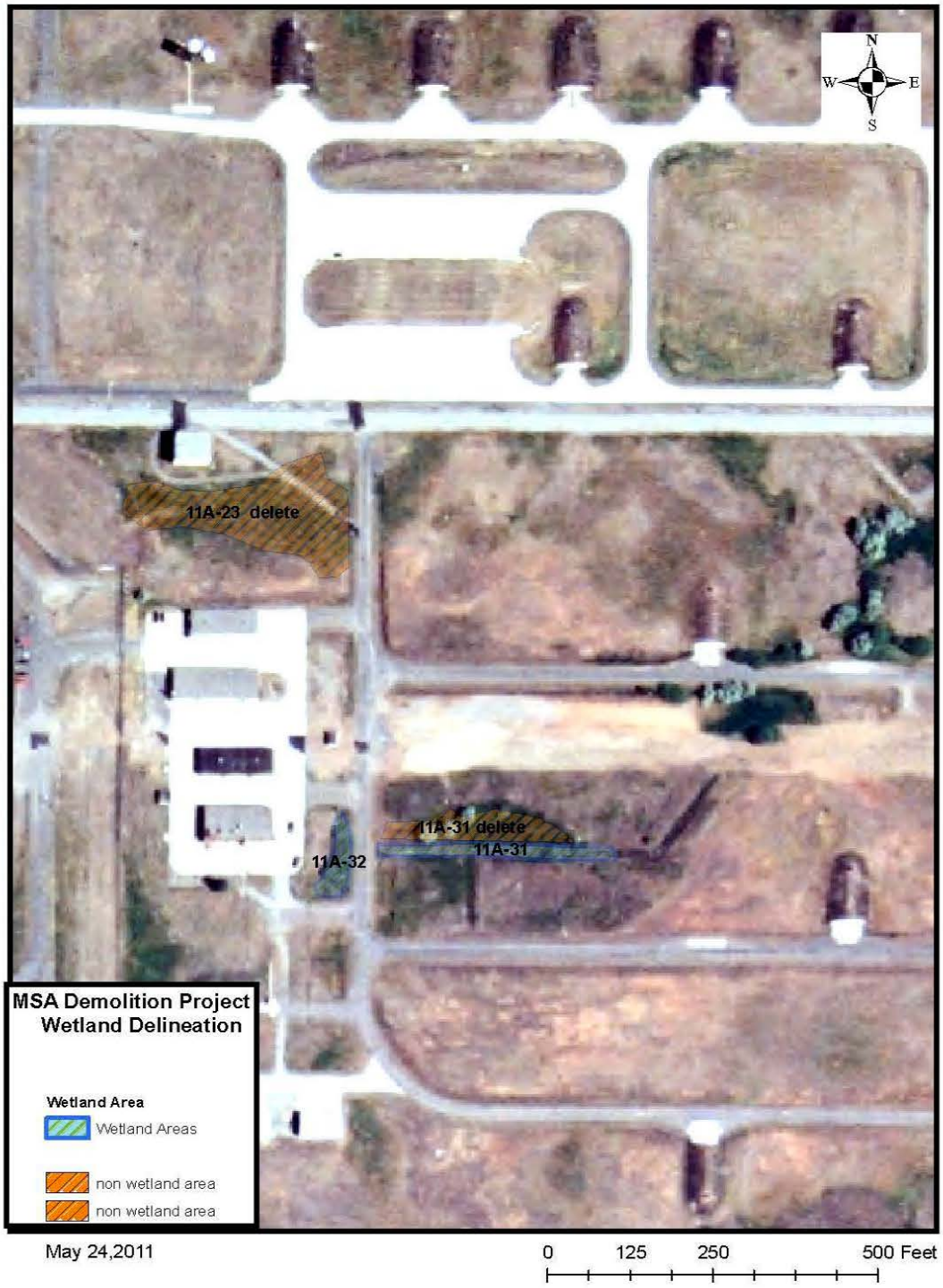


Figure 2. Munitions Storage Area (MSA) Demolition Project - Wetlands Delineation Results, May 24,2011. Two areas deleted from Fairchild AFB wetlands inventory.

Appendix B Data Forms

Wetland name or number 11A-31

WETLAND RATING FORM – EASTERN WASHINGTON

Version 2 - Updated June 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Fairchild AFB - MSA Date of site visit: 05/24/2011

Rated by Joni Sasich Trained by Ecology? Yes__No___ Date of training_____

SEC: 4 TWNSHP: 25N RNGE: 41E Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure 1 Estimated size 0.2 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X__ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for "Water Quality" Functions	24
Score for Hydrologic Functions	12
Score for Habitat Functions	10
TOTAL score for functions	46

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ III___ Does not Apply X__

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Type		Wetland Class	
Vernal Pool		**Depressional**	
Alkali		**Riverine**	x
Natural Heritage Wetland		**Lake-fringe**	
Bog		**Slope**	
Forest			
None of the above		Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		x
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 20 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Eastern Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Does the entire wetland unit **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 3 m (10 ft)?

NO – go to Step 2 **YES –** The wetland class is **Lake-fringe (lacustrine fringe)**

2. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

NO - go to Step 3 **YES –** The wetland class is **Slope**

3. Is the entire wetland unit in a valley or stream channel where it gets inundated by overbank flooding from that stream or river? In general, the flooding should occur at least once every ten years to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*

NO - go to Step 4 **YES –** The wetland class is **Riverine**

4. Is the entire wetland unit in a topographic depression, outside areas that are inundated by overbank flooding, in which water ponds, or is saturated to the surface, at some time of the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to Step 5 **YES –** The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

D	**Depressional Wetlands** WATER QUALITY FUNCTIONS - Indicators that the wetland functions to improve water quality	**Points** (only 1 score per box)
D	**D 1.0 Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 38)***
D	D 1.1 Characteristics of surface water flows out of the wetland unit: Wetland has no surface water outlet - points = 5 Wetland has an intermittently flowing outlet points = 3 Wetland has a highly constricted permanently flowing outlet points = 3 Wetland has a permanently flowing surface outlet points = 1	1
D	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions of soil types)* YES points = 3 NO points = 0	3
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation for > 2/3 of area points = 5 Wetland has persistent, ungrazed, vegetation from 1/3 to 2/3 of area points = 3 Wetland has persistent, ungrazed vegetation from 1/10 to < 1/3 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	**Figure** ___ 5
D	D 1.4 Characteristics of seasonal ponding or inundation. *This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.* Area seasonally ponded is > ½ total area of wetland points = 3 Area seasonally ponded is ¼ - ½ total area of wetland points = 1 Area seasonally ponded is < ¼ total area of wetland points = 0 NOTE: *See text for indicators of seasonal and permanent inundation/flooding.* Map of Hydroperiods	**Figure** ___ 3
D	**Total for D 1** *Add the points in the boxes above*	12
D	**D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
D	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from D1 by the multiplier in D2 ***Record score on p. 1 of field form***	24

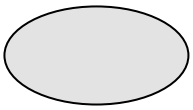
D	**Depressional Wetlands** HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
D	**D 3.0 Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 39)***
D	D 3.1 Characteristics of surface water flows out of the wetland unit: Wetland has no surface water outlet points = 8 Wetland has an intermittently flowing outlet points = 4 Wetland has a highly constricted permanently flowing outlet points = 4 Wetland has a permanently flowing surface outlet points = 0	8
D	D 3.2 Depth of storage during wet periods: *Estimate the height of ponding above the surface of the wetland (see text for description of measuring height). In wetlands with permanent ponding, the surface is the lowest elevation of "permanent" water)* Marks of ponding are at least 3 ft above the surface points = 8 The wetland is a "headwater" wetland" *(see p. 39)* points = 6 Marks are 2 ft to < 3 ft from surface points = 6 Marks are 1 ft to < 2 ft from surface points = 4 Marks are 6 in to < 1 ft from surface points = 2 No marks above 6 in. or wetland has only saturated soils points = 0	4
D	**Total for D 3** *Add the points in the boxes above*	12
D	**D 4.0 Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** *Answer NO if the major source of water is groundwater, irrigation return flow, or water levels in the wetland are controlled by a reservoir.* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 42)*** multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D3 by the multiplier in D4 ***Record score on p. 1 of field form***	12

Comments

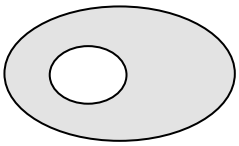
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Categories of vegetation structure</u> ***(see p.62)***	**Figure** ___
Check the vegetation classes (as defined by Cowardin) and heights of emergents present. Size threshold for each class or height category is ¼ acre or more than 10% of the area if unit is < 2.5 acres. ____Aquatic bed x ____Emergent plants 0-12 in. (0 – 30 cm) high are the highest layer and have > 30% cover x ____Emergent plants >12 – 40 in.(>30 – 100cm) high are the highest layer with >30% cover x ____Emergent plants > 40 in.(> 100cm) high are the highest layer with >30% cover ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *Add the number of vegetation types that qualify. If you have:* 4-6 types points = 3 3 types points = 2 2 types points = 1 1 type points = 0 Map of Cowardin vegetation classes and areas with different heights of emergents	2
H 1.2. Is one of the vegetation types "aquatic bed?" ***(see p .64)*** YES = 1 point NO = 0 points	0
H 1.3. <u>Surface Water</u> ***(see p.65)*** H 1.3.1 Does the unit have areas of "open" water (without herbaceous or shrub plants) over at least ¼ acre or 10% of its area during the spring (March – early June) OR in early fall (August – end of September)? *Note: answer YES for Lake-fringe wetlands* YES = 3 points & **go to H 1.4** NO = go to H 1.3.2 H 1.3.2 Does the unit have an intermittent or permanent stream within its boundaries, or along one side, over at least ¼ acre or 10% of its area, AND that has an unvegetated bottom (*answer yes only if H 1.3.1 is NO*)? YES = 3 points NO = 0 points Map showing areas of open water	**Figure** ___ 0
H 1.4. <u>Richness of Plant Species</u> ***(see p. 66)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasean Milfoil, reed canarygrass, purple loosestrife, Russian Olive, Phragmites ,Canadian Thistle, Yellow-flag Iris, and Salt Cedar (Tamarisk)* If you counted: > 9 species points = 2 4-9 species points = 1 # of species ____ < 4 species points = 0 points *List species below if you wish*	1

H 1.5. Interspersion of habitats ***(see p. 67)***

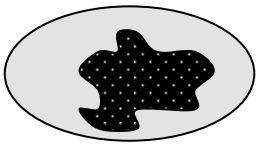
Decided from the diagrams below whether interspersion between categories of vegetation (described in H 1.1), or categories and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.

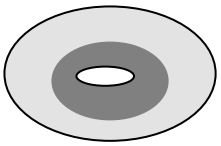


None = 0 points

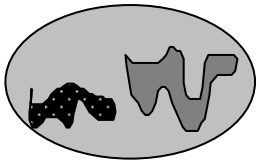


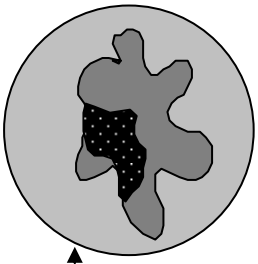
Low = 1 point

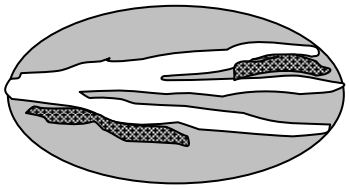




Moderate = 2 points







[Riparian braided channel]

High = 3 points

NOTE: If you have four or more vegetation categories or three vegetation categories and open water the rating is always "high". Use maps from H1.1 and H1.3

Figure ___

1

H 1.6. Special Habitat Features: ***(see p. 68)***

Check the habitat features that are present in the wetland unit. The number of checks is the number of points you put into the next column.

____Loose rocks larger than 4" **or** large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream.

X ____Cattails or bulrushes are present within the unit.

____Standing snags (diameter at the bottom > 4 inches) in the wetland unit or within 30 m (100ft) of the edge.

X ____Emergent or shrub vegetation in areas that are permanently inundated/ponded. *The presence of "yellow flag" Iris is a good indicator of vegetation in areas permanently ponded.*

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>45 degree slope) OR signs of recent beaver activity

X ____ Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*

Maximum score possible = 6

3

TOTAL Potential to provide habitat
Add the scores in the column above

7

Comments

H 2.0 Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 71)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed." Relatively undisturbed also means no grazing, no landscaping, no daily human use, and no structures or paving within undisturbed part of buffer.* ☐ 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference **Points = 5** ☐ 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ☐ 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** ☐ 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ☐ 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ Heavy grazing in buffer. **Points = 1** ☐ Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g . tilled fields, paving, basalt bedrock extend to edge of wetland). **Points = 0** ☑ Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 1
H 2.2 Wet Corridors ***(see p. 72)*** H 2.2.1 Is the wetland unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (*dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor*). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H 2.2.2 Is the unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor, at least ¼ mile long with water flowing seasonally, **OR** a lake-fringe wetland without a "wet" corridor, **OR** a riverine wetland without a surface channel connecting to the stream? YES = 2 points (go to H 2.3) NO go to H 2.2.3 H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (*do not include man-made ditches*)? YES = 1 point NO = 0 points	0

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections to the habitats can be disturbed.*

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____ **Eastside Steppe:** Non-forested vegetation type dominated by broadleaf herbaceous flora ((*full description of herbaceous species found here are in WDFW PHS report p. 153*).

____**Old-growth/Mature forests (east of Cascade crest):** (*full descriptions in WDFW PHS report p. 157*). Old-growth: Stands are > 150 yrs in age; may be variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. Mature: Stands 80 – 160 yrs old. Decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

_____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

____ **Juniper Savannah**: All juniper woodlands (*SE part of state only; check map*)

____ **Shrub-steppe**: A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

_____Inland Dunes This placeholder is for a new priority habitat that will capture areas known as Inland Dunes. A definition will be developed later in Fall 2008. *(check WDFW web site)*

_____**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

_____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

_____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 30 cm (12 in) in eastern Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **2 or more** Priority Habitats = **4 points**
If wetland has **1** Priority Habitat = **2 points**
No Priority habitats = **0 points**

0

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

H 2.4 Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 76)***	
☐ The wetland unit is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (*Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs*) **points = 5**	
☐ There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development) **points = 5**	
✔ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? **points = 2**	
☐ There is at least 1 wetland within ½ mile**.** **points = 1**	
☐ Does not meet any of the four criteria above **points = 0**	2
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	2
H 3.0 Does the wetland unit have indicators that its ability to provide habitat is reduced?	
H 3.1 Indicator of reduced habitat functions ***(see p. 75)*** Do the areas of open water in the wetland unit have a resident population of carp (see text for indicators of the presence of carp)? *(NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)* YES = **- 5 points** NO = 0 points	*Points will be subtracted* 0
Total Score for Habitat Functions *– add the points for H 1, H 2, and H 3 and record the result on p. 1*	10

Comments

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland unit meets the attributes described below and circle the appropriate Category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All units should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	Category
SC 1.0 Vernal pools ***(see p. 79)*** Is the wetland unit **less than 4000 ft^2**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *NOTE: If you find perennial, "obligate", wetland plants the wetland is probably NOT a vernal pool* — The soil in the wetland are shallow (<1ft deep (30 cm)) and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the "wet" season. YES = Go to SC 1.1 NO - *not a vernal pool* SC 1.1 Is the vernal pool relatively undisturbed in February and March? YES = Go to SC 1.2 NO – *not a vernal pool with special characteristics*	
SC 1.2 Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 miles (other wetlands, rivers, lakes etc.)? YES = Category II NO = Category III	**Cat. II** **Cat. III**
SC 2.0 Alkali wetlands ***(see p. 81)*** Does the wetland unit meets **one** of the following two criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 - 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 2 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meets two of the following three sub-criteria? — Salt encrustations around more than 80% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 2 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. YES = Category I NO – *not an alkali wetland*	**Cat. I**

SC 3.0 Natural Heritage Wetlands ***(see p. 81)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 3.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR database ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO X SC 3.2 Has DNR identified the wetland unit as a high quality undisturbed wetland or as or as a site with state threatened, endangered, or sensitive plant species? YES = Category I NO –*not a natural heritage wetland*	**Cat. I**
SC 4.0 Bogs ***(see p. 82)*** Does the wetland unit **(or any part of the wetland unit)** meet both the criteria for soils and vegetation in bogs. *Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.* SC 4.1. Does the wetland unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to SC 4.3 No - go to SC 4.2 SC 4.2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?? Yes - go to SC 4.3 No - *Is not a bog for rating* SC 4.3. Does the wetland unit have more than 70% cover of mosses at ground level in any area within its boundaries, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Category I bog No - go to Q. 4.4 *NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* SC 4.4. Is the unit, or any part of it, forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* Yes – Category I bog NO	**Cat. I** **Cat. I**

SC 5.0 Forested Wetlands *(see p. 85)* Does the wetland unit have an area of forest (*you should have identified a forested class, if present, in question H 1.1*) rooted within its boundary that meet **at least one** of the following three criteria? — The wetland is within the "100 year" floodplain of a river or stream — aspen (*Populus tremuloides*) are a dominant or co-dominant of the "woody" vegetation. (*Dominants means it represents at least 50% of the cover of woody species, co-dominant means it represents at least 20% of the total cover of woody species*) — There is at least ¼ acre of trees (even in wetlands smaller than 2.5 acres) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see p. 83)* YES = go to SC 5.1 NO –*not a forested wetland with special characteristics*	
SC 5.1 Does the wetland unit have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees Slow growing trees are: western red cedar (*Thuja plicata*), Alaska yellow cedar (*Chamaecyparis nootkatensis*), pine spp. mostly "white" pine (*Pinus monticola*), western hemlock (*Tsuga heterophylla*), Englemann spruce (*Picea engelmannii*). YES = Category I NO = go to SC 5.2	**Cat. I**
SC 5.2 Does the unit have areas where aspen (*Populus tremuloides*) are a dominant or co-dominant species? YES = Category I NO = go to SC 5.3	**Cat. I**
SC 5.3 Does the wetland unit have areas with a forest canopy where more than 50% of the tree species (by cover) are fast growing species. Fast growing species are: Alders – red (*Alnus rubra*), thin-leaf (*A. tenuifolia*) Cottonwoods – narrow-leaf (*Populus angustifolia*), black (*P. balsamifera*) Willows- peach-leaf (*Salix amygdaloides*), Sitka (*S. sitchensis*), Pacific (*S. lasiandra*), Aspen - (*Populus tremuloides*), Water Birch (*Betula occidentalis*) YES = Category II NO = go to SC 5.5	**Cat. II**
SC 5.5 Is the forested component of the wetland within the "100 year floodplain" of a river or stream? YES = Category II	**Cat. II**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories.* If you answered NO for all types enter "Not Applicable" on p.1	n/a

Wetland name or number 11A-31

WETLAND RATING FORM – EASTERN WASHINGTON

Version 2 - Updated June 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Fairchild AFB - MSA Date of site visit: 05/24/2011

Rated by Joni Sasich Trained by Ecology? Yes__No___ Date of training_____

SEC: 4 TWNSHP: 25N RNGE: 41E Is S/T/R in Appendix D? Yes___ No___

Map of wetland unit: Figure 1 Estimated size 0.2 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X__ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for "Water Quality" Functions	24
Score for Hydrologic Functions	12
Score for Habitat Functions	10
TOTAL score for functions	46

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ III___ Does not Apply X__

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Type		Wetland Class	
Vernal Pool		**Depressional**	
Alkali		**Riverine**	x
Natural Heritage Wetland		**Lake-fringe**	
Bog		**Slope**	
Forest			
None of the above		Check if unit has multiple HGM classes present	

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		x
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		X

<u>To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.</u>

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 20 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Eastern Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Does the entire wetland unit **meet both** of the following criteria?

___The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

___At least 30% of the open water area is deeper than 3 m (10 ft)?

NO – go to Step 2 **YES –** The wetland class is **Lake-fringe (lacustrine fringe)**

2. Does the entire wetland unit **meet all** of the following criteria?

____The wetland is on a slope (*slope can be very gradual*),

____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

____The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

NO - go to Step 3 **YES –** The wetland class is **Slope**

3. Is the entire wetland unit in a valley or stream channel where it gets inundated by overbank flooding from that stream or river? In general, the flooding should occur at least once every ten years to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*

NO - go to Step 4 **YES –** The wetland class is **Riverine**

4. Is the entire wetland unit in a topographic depression, outside areas that are inundated by overbank flooding, in which water ponds, or is saturated to the surface, at some time of the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to Step 5 **YES –** The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

D	**Depressional Wetlands** WATER QUALITY FUNCTIONS - Indicators that the wetland functions to improve water quality	**Points** (only 1 score per box)
D	**D 1.0 Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 38)***
D	D 1.1 Characteristics of surface water flows out of the wetland unit: Wetland has no surface water outlet - points = 5 Wetland has an intermittently flowing outlet points = 3 Wetland has a highly constricted permanently flowing outlet points = 3 Wetland has a permanently flowing surface outlet points = 1	1
D	D 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions of soil types)* YES points = 3 NO points = 0	3
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation for > 2/3 of area points = 5 Wetland has persistent, ungrazed, vegetation from 1/3 to 2/3 of area points = 3 Wetland has persistent, ungrazed vegetation from 1/10 to < 1/3 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	**Figure** ___ 5
D	D 1.4 Characteristics of seasonal ponding or inundation. *This is the area of ponding that fluctuates every year. Do not count the area that is permanently ponded.* Area seasonally ponded is > ½ total area of wetland points = 3 Area seasonally ponded is ¼ - ½ total area of wetland points = 1 Area seasonally ponded is < ¼ total area of wetland points = 0 NOTE: *See text for indicators of seasonal and permanent inundation/flooding.* Map of Hydroperiods	**Figure** ___ 3
D	**Total for D 1** *Add the points in the boxes above*	12
D	**D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
D	**<u>TOTAL</u> - Water Quality Functions** Multiply the score from D1 by the multiplier in D2 ***Record score on p. 1 of field form***	24

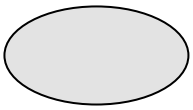
D	**Depressional Wetlands** HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
D	**D 3.0 Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 39)***
D	D 3.1 Characteristics of surface water flows out of the wetland unit: Wetland has no surface water outlet points = 8 Wetland has an intermittently flowing outlet points = 4 Wetland has a highly constricted permanently flowing outlet points = 4 Wetland has a permanently flowing surface outlet points = 0	8
D	D 3.2 Depth of storage during wet periods: *Estimate the height of ponding above the surface of the wetland (see text for description of measuring height). In wetlands with permanent ponding, the surface is the lowest elevation of "permanent" water)* Marks of ponding are at least 3 ft above the surface points = 8 The wetland is a "headwater" wetland" *(see p. 39)* points = 6 Marks are 2 ft to < 3 ft from surface points = 6 Marks are 1 ft to < 2 ft from surface points = 4 Marks are 6 in to < 1 ft from surface points = 2 No marks above 6 in. or wetland has only saturated soils points = 0	4
D	**Total for D 3** *Add the points in the boxes above*	12
D	**D 4.0 Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** *Answer NO if the major source of water is groundwater, irrigation return flow, or water levels in the wetland are controlled by a reservoir.* Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 42)*** multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D3 by the multiplier in D4 ***Record score on p. 1 of field form***	12

Comments

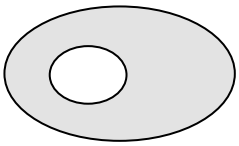
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Categories of vegetation structure</u> ***(see p.62)***	**Figure** ___
Check the vegetation classes (as defined by Cowardin) and heights of emergents present. Size threshold for each class or height category is ¼ acre or more than 10% of the area if unit is < 2.5 acres. ____Aquatic bed x ____Emergent plants 0-12 in. (0 – 30 cm) high are the highest layer and have > 30% cover x ____Emergent plants >12 – 40 in.(>30 – 100cm) high are the highest layer with >30% cover x ____Emergent plants > 40 in.(> 100cm) high are the highest layer with >30% cover ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *Add the number of vegetation types that qualify. If you have:* 4-6 types points = 3 3 types points = 2 2 types points = 1 1 type points = 0 Map of Cowardin vegetation classes and areas with different heights of emergents	2
H 1.2. Is one of the vegetation types "aquatic bed?" ***(see p .64)*** YES = 1 point NO = 0 points	0
H 1.3. <u>Surface Water</u> ***(see p.65)*** H 1.3.1 Does the unit have areas of "open" water (without herbaceous or shrub plants) over at least ¼ acre or 10% of its area during the spring (March – early June) OR in early fall (August – end of September)? *Note: answer YES for Lake-fringe wetlands* YES = 3 points & **go to H 1.4** NO = go to H 1.3.2 H 1.3.2 Does the unit have an intermittent or permanent stream within its boundaries, or along one side, over at least ¼ acre or 10% of its area, AND that has an unvegetated bottom (*answer yes only if H 1.3.1 is NO*)? YES = 3 points NO = 0 points Map showing areas of open water	**Figure** ___ 0
H 1.4. <u>Richness of Plant Species</u> ***(see p. 66)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasean Milfoil, reed canarygrass, purple loosestrife, Russian Olive, Phragmites ,Canadian Thistle, Yellow-flag Iris, and Salt Cedar (Tamarisk)* If you counted: > 9 species points = 2 4-9 species points = 1 # of species ____ < 4 species points = 0 points *List species below if you wish*	1

H 1.5. Interspersion of habitats ***(see p. 67)***

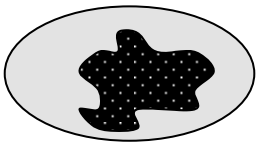
Decided from the diagrams below whether interspersion between categories of vegetation (described in H 1.1), or categories and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.

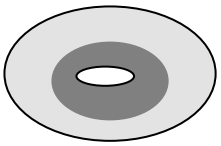


None = 0 points

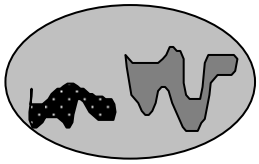


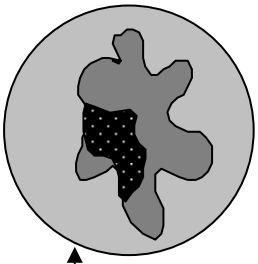
Low = 1 point

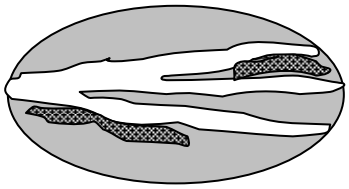




Moderate = 2 points







[Riparian braided channel]

High = 3 points

NOTE: If you have four or more vegetation categories or three vegetation categories and open water the rating is always "high". Use maps from H1.1 and H1.3

Figure ___

1

H 1.6. Special Habitat Features: ***(see p. 68)***

Check the habitat features that are present in the wetland unit. The number of checks is the number of points you put into the next column.

____Loose rocks larger than 4" **or** large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream.

X ____Cattails or bulrushes are present within the unit.

____Standing snags (diameter at the bottom > 4 inches) in the wetland unit or within 30 m (100ft) of the edge.

X ____Emergent or shrub vegetation in areas that are permanently inundated/ponded. *The presence of "yellow flag" Iris is a good indicator of vegetation in areas permanently ponded.*

____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>45 degree slope) OR signs of recent beaver activity

X ____ Invasive species cover less than 20% in each stratum of vegetation *(canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)*

Maximum score possible = 6

3

TOTAL Potential to provide habitat
Add the scores in the column above

7

Comments

H 2.0 Does the wetland have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 71)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed." Relatively undisturbed also means no grazing, no landscaping, no daily human use, and no structures or paving within undisturbed part of buffer.* ☐ 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference **Points = 5** ☐ 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ☐ 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** ☐ 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ☐ 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ Heavy grazing in buffer. **Points = 1** ☐ Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g . tilled fields, paving, basalt bedrock extend to edge of wetland). **Points = 0** ☑ Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 1
H 2.2 Wet Corridors ***(see p. 72)*** H 2.2.1 Is the wetland unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (*dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor*). YES = 4 points (go to H 2.3) NO = go to H 2.2.2 H 2.2.2 Is the unit part of a relatively undisturbed and unbroken, > 30 ft wide, vegetated corridor, at least ¼ mile long with water flowing seasonally, **OR** a lake-fringe wetland without a "wet" corridor, **OR** a riverine wetland without a surface channel connecting to the stream? YES = 2 points (go to H 2.3) NO go to H 2.2.3 H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (*do not include man-made ditches*)? YES = 1 point NO = 0 points	0

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections to the habitats can be disturbed.*

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

____**Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

____ **Eastside Steppe:** Non-forested vegetation type dominated by broadleaf herbaceous flora ((*full description of herbaceous species found here are in WDFW PHS report p. 153*).

____**Old-growth/Mature forests (east of Cascade crest):** (*full descriptions in WDFW PHS report p. 157*). Old-growth: Stands are > 150 yrs in age; may be variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. Mature: Stands 80 – 160 yrs old. Decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

_____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

____ **Juniper Savannah**: All juniper woodlands (*SE part of state only; check map*)

____ **Shrub-steppe**: A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).

____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

_____Inland Dunes This placeholder is for a new priority habitat that will capture areas known as Inland Dunes. A definition will be developed later in Fall 2008. *(check WDFW web site)*

_____**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

_____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.

_____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

____**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 30 cm (12 in) in eastern Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

If wetland has **2 or more** Priority Habitats = **4 points**
If wetland has **1** Priority Habitat = **2 points**
No Priority habitats = **0 points**

0

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

H 2.4 Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 76)***	
☐ The wetland unit is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (*Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs*) **points = 5**	
☐ There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development) **points = 5**	
✔ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? **points = 2**	
☐ There is at least 1 wetland within ½ mile**.** **points = 1**	
☐ Does not meet any of the four criteria above **points = 0**	2
H 2. TOTAL Score - opportunity for providing habitat *Add the scores in the column above*	2
H 3.0 Does the wetland unit have indicators that its ability to provide habitat is reduced?	
H 3.1 Indicator of reduced habitat functions ***(see p. 75)*** Do the areas of open water in the wetland unit have a resident population of carp (see text for indicators of the presence of carp)? *(NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)* YES = **- 5 points** NO = 0 points	*Points will be subtracted* 0
Total Score for Habitat Functions *– add the points for H 1, H 2, and H 3 and record the result on p. 1*	10

Comments

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland unit meets the attributes described below and circle the appropriate Category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All units should also be characterized based on their functions.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	Category
SC 1.0 Vernal pools ***(see p. 79)*** Is the wetland unit **less than 4000 ft^2**, and does it meet at least **two** of the following criteria? — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. *NOTE: If you find perennial, "obligate", wetland plants the wetland is probably NOT a vernal pool* — The soil in the wetland are shallow (<1ft deep (30 cm)) and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the "wet" season. YES = Go to SC 1.1 NO - *not a vernal pool* SC 1.1 Is the vernal pool relatively undisturbed in February and March? YES = Go to SC 1.2 NO – *not a vernal pool with special characteristics*	
SC 1.2 Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 miles (other wetlands, rivers, lakes etc.)? YES = Category II NO = Category III	**Cat. II** **Cat. III**
SC 2.0 Alkali wetlands ***(see p. 81)*** Does the wetland unit meets **one** of the following two criteria? — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 - 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 2 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. **OR** does the wetland unit meets two of the following three sub-criteria? — Salt encrustations around more than 80% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 2 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. YES = Category I NO – *not an alkali wetland*	**Cat. I**

SC 3.0 Natural Heritage Wetlands ***(see p. 81)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 3.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ___ or accessed from WNHP/DNR database ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO X SC 3.2 Has DNR identified the wetland unit as a high quality undisturbed wetland or as or as a site with state threatened, endangered, or sensitive plant species? YES = Category I NO –*not a natural heritage wetland*	**Cat. I**
SC 4.0 Bogs ***(see p. 82)*** Does the wetland unit **(or any part of the wetland unit)** meet both the criteria for soils and vegetation in bogs. *Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.* SC 4.1. Does the wetland unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to SC 4.3 No - go to SC 4.2 SC 4.2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?? Yes - go to SC 4.3 No - *Is not a bog for rating* SC 4.3. Does the wetland unit have more than 70% cover of mosses at ground level in any area within its boundaries, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Category I bog No - go to Q. 4.4 *NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.* SC 4.4. Is the unit, or any part of it, forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* Yes – Category I bog NO	**Cat. I** **Cat. I**

SC 5.0 Forested Wetlands *(see p. 85)* Does the wetland unit have an area of forest (*you should have identified a forested class, if present, in question H 1.1*) rooted within its boundary that meet **at least one** of the following three criteria? — The wetland is within the "100 year" floodplain of a river or stream — aspen (*Populus tremuloides*) are a dominant or co-dominant of the "woody" vegetation. (*Dominants means it represents at least 50% of the cover of woody species, co-dominant means it represents at least 20% of the total cover of woody species*) — There is at least ¼ acre of trees (even in wetlands smaller than 2.5 acres) that are "mature" or "old-growth" according to the definitions for these priority habitats developed by WDFW *(see p. 83)* YES = go to SC 5.1 NO –*not a forested wetland with special characteristics*	
SC 5.1 Does the wetland unit have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees Slow growing trees are: western red cedar (*Thuja plicata*), Alaska yellow cedar (*Chamaecyparis nootkatensis*), pine spp. mostly "white" pine (*Pinus monticola*), western hemlock (*Tsuga heterophylla*), Englemann spruce (*Picea engelmannii*). YES = Category I NO = go to SC 5.2	**Cat. I**
SC 5.2 Does the unit have areas where aspen (*Populus tremuloides*) are a dominant or co-dominant species? YES = Category I NO = go to SC 5.3	**Cat. I**
SC 5.3 Does the wetland unit have areas with a forest canopy where more than 50% of the tree species (by cover) are fast growing species. Fast growing species are: Alders – red (*Alnus rubra*), thin-leaf (*A. tenuifolia*) Cottonwoods – narrow-leaf (*Populus angustifolia*), black (*P. balsamifera*) Willows- peach-leaf (*Salix amygdaloides*), Sitka (*S. sitchensis*), Pacific (*S. lasiandra*), Aspen - (*Populus tremuloides*), Water Birch (*Betula occidentalis*) YES = Category II NO = go to SC 5.5	**Cat. II**
SC 5.5 Is the forested component of the wetland within the "100 year floodplain" of a river or stream? YES = Category II	**Cat. II**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories.* If you answered NO for all types enter "Not Applicable" on p.1	n/a

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 11A-32 City/County: Spokane Sampling Date: 5/29/2011

Applicant/Owner: FAIRCHILD AFB (MSA) State: _____ Sampling Point: _____

Investigator(s): _____ Section, Township, Range: 9 T25N R41E

Landform (hillslope, terrace, etc.): basin pothole Local relief (concave, convex, none): planar Slope (%): 2

Subregion (LRR): J. SASICH Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Uhlig/Cheney complex 0-8% slope NWI classification: unknown

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 100%)			
1. Salix spp	80	yes	FACW
2. Fraxinus spp	10	no	FAC
3. Rosa spp	tr	no	FACU
4.			
5.			
	90 = Total Cover		
Herb Stratum (Plot size: 100%)			
1. Typha latifolia	10	no	OBL
2. Phalaris arundinacea	5	no	FACW
3. Callitriche heterophylla	35	yes	OBL
4. Juncus effusus	20	yes	FACW
5. Canada thistle	15	no	FAC
6.			
7.			
8.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 45	x 1 = 45
FACW species 115	x 2 = 230
FAC species 25	x 3 = 75
FACU species tr (1)	x 4 = 4
UPL species _____	x 5 = _____
Column Totals: 185 (A)	354 (B)

Prevalence Index = B/A = 2

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

100% Sample

SOIL

Sampling Point: ____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ✓ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes ✓ No ____

Remarks:

Water at surface of soil. No soils dug - assumed saturated conditions

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ✓ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✗ No ____ Depth (inches): ____

Water Table Present? Yes ✗ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ✗ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 11A-23 nonwetland City/County: Spokane Sampling Date: 5/24/2011
Applicant/Owner: FAIRCHILD AFB (MSA) State: _____ Sampling Point: _____
Investigator(s): J. SASICH Section, Township, Range: 4 T25N R41E
Landform (hillslope, terrace, etc.): Basin pothole Local relief (concave, convex, none): planar Slope (%): <2
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Uhlig / Cheney complex 0-8% slope NWI classification: Unknown
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Festuca idahoensis	5		FACU
2. Smooth brome	50		FACU
3. Juncus effusus	25		FACW
4. Phalaris arundinacea	2		FACW
5. Iris missourensis	2		FACW
6. knapweed	5		upl
7. Tragopogon dubius	tr		upl
8. Poa Sandbergii & bulbosa	15		upl
	= Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	—	x 1 =	
FACW species	29	x 2 =	58
FAC species		x 3 =	
FACU species	55	x 4 =	220
UPL species	20	x 5 =	100
Column Totals:	104 (A)		378 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50% no
___ Prevalence Index is ≤3.0[1] no
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:
Two species, Iris & Juncus, are indicative of vernal pool plants
Could this have been a filled in vernal pool?

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20+	10YR 3/2		none					

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

well drained pachic mollisol

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no saturation in soil or on the surface. No indication of seasonal ponding, even in the ditchline nearby.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 11A-31 wetland pothole City/County: Spokane Sampling Date: 5/24/2011
Applicant/Owner: FAIRCHILD AFB (MSA) State: WA Sampling Point: _____
Investigator(s): J. SASICH Section, Township, Range: 4 T25N R41E
Landform (hillslope, terrace, etc.): basin pothole Local relief (concave, convex, none): planar Slope (%): <2
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Uhlig/Cheney complex 0-8% slope NWI classification: unknown
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.) slightly more ppt.
Are Vegetation yes, Soil yes, or Hydrology yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. none			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 100%)			
1. Cornus sericea	5		FACW
2. Salix spp	15		FACW
3. Typha latifolia	80	yes	OBL
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1/10 Ac)			
1. Mentha arvensis	30	yes	FACW
2. Callitriche heterophylla	20	yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. none			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	50	x 2 =	100
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	150 (A)		200 (B)

Prevalence Index = B/A = 1.3

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: 11A-31 nonwetland portion City/County: Spokane Sampling Date: 5/24/2011
Applicant/Owner: FAIRCHILD AFB (MSA) State: WA Sampling Point: _____
Investigator(s): J. SASICH Section, Township, Range: _____
Landform (hillslope, terrace, etc.): basin pothole Local relief (concave, convex, none): planar Slope (%): 2
Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Uhlig/Cheney complex 0-8% slope NWI classification: unknown
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation yes Soil yes, or Hydrology yes significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
Are Vegetation no, Soil no, or Hydrology no naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
Area was included in Fairchild's wetland map based upon NWI

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 100%)			
1. Poa pratensis	80	yes	FAC
2. Asclepias subverticillata	30	yes	FACU
3. Russian Olive	25	yes	FAC
4. Phalaris arundinacea	30	yes	FACW
5. Amelanchier alnifolia	5	no	FACU
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet: 50% dominant species
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	115	x 3 =	345
FACU species	30	x 4 =	120
UPL species	—	x 5 =	
Column Totals:	175 (A)		525 (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Dominants 50/20 Rule:
Add most abundant species up to 50% of total dom. per stratum.
Add next species ≥ 20% cover per stratum
TOTAL # of species indicating wetland are FAC or wetter. A
TOTAL # ALL dominant species B ∴ A/B must be ≥ 50% to be

Appendix C Correspondence

Appendix C

Joni Sasich

Subject: Osprey and Migratory Bird Treaty Act

-----Original Message-----
From: Carrie J Cordova@fws.gov [mailto:Carrie J Cordova@fws.gov]
Sent: Monday, June 27, 2011 10:45 AM
To: WALD, JONATHAN A GS-12 USAF AMC 92 CES/CEAO
Cc: Michelle Eames@fws.gov
Subject: RE: INRMP Update 2009

Thanks, Jonathan. that sounds good to me. We'll wait for the draft EA and respond accordingly. CC

Carrie Cordova
Botanist/Ecologist
Eastern Washington Field Office (EWFO)
11103 E. Montgomery
Spokane, WA 99206
(509)893-8022

To

"Carrie J Cordova@fws.gov" <Carrie J Cordova@fws.gov>

cc

"Michelle Eames@fws.gov" <Michelle Eames@fws.gov>, "Michael Green@fws.gov" <Michael Green@fws.gov>

Carrie -

Thanks for the email. I spoke with Mike Green on Friday as well. I think we are all in agreement. The performance work statement requires the work to be completed in 180 days with no winter exclusion. This means that if the project were to get funded at year-end (30 Sept at the latest), then presumably everything would be wrapped up by 28 March. Even then, the demolition activities should be completed well before that date and the only thing occurring in March would be site restoration type activities.

Nest building does not usually begin until April so we should be completed well before that happens, let alone when eggs/chicks first appear.

We'll send you a copy of the draft EA during the public review period and also keep you in the loop as we get closer to project award timeline. Will this work for you?

Jonathan

JONATHAN A. WALD
Chief, Asset Optimization
92 Civil Engineer Squadron/CEA
Fairchild AFB, WA 99011
509-247-8207

Joni Sasich

Subject: FW: Osprey Nest @ Fairchild AFB

-----Original Message-----
From: Michael Green@fws.gov [mailto:Michael Green@fws.gov]
Sent: Monday, June 27, 2011 10:57 AM
To: WALD, JONATHAN A GS-12 USAF AMC 92 CES/CEAO
Subject: Re: Osprey Nest @ Fairchild AFB

As the species is not listed under ESA, there is no need for Section 7 consultation under that act. Take under MBTA is a very remote possibility, but given the timing and distance of the activities to the nest area, take due to disturbance is highly unlikely. In the case that demolitiion is not complete by the time the Ospreys return from wintering grounds, and they begin building a nest despite the demolition at the site, then it would appear they will be unaffected by the commotion.

There could be other species nesting in the area that should be watched for, e.g. Killdeer. However, the nesting season of killdeer is usually later than the end of the scheduled demolition, and that is true for the majority of other species that could be nesting on the base.

In short, I have no concerns regarding a violation of MBTA due to the is activity.

Mike Green
U.S. Fish and Wildlife Service
Division of Migratory Birds and Habitat Programs
911 NE 11th Avenue
Portland, Oregon 97232
503-872-2707/FAX 503-231-2019

Mike -

We spoke on the phone Friday about the osprey nest adjacent (see attached pdfs) to a site where we are proposing to demolition some old, unsafe, energy inefficient facilities that are no longer mission required. As discussed, the current plan of action is to award a contract near the end of FY11. The contract performance work statement states that the contract has 180 days to complete and there is no winter exclusion for this project. Based on that timeline and a project award of 30 September 2011 (at the latest), the demolition work would be completed no later than 28 March.

While I realize that the start of nesting season is dependent upon a number of variables, weather being a big one, in most years my observation has been that nest building activities do not generally begin until late March / early April. In addition, we have daily helicopter operations that have occurred in the area (200 yards away) for decades and I have never seen a nest abandoned due to that noise and commotion. Of course there are other daily type activities (vehicle traffic on nearby roads, etc) that occur as well.

While I realize that Osprey are not listed as threatened or endangered, they are protected under the Migratory Bird Treaty Act. Based on the information above, would you agree that Section 7 consultation is not required?

Thanks,

Jonathan

JONATHAN A. WALD

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

MEMORANDUM FOR ALL AMC WING/COMMANDERS 30 MAR 2011

FROM: AMC/CV
402 Scott Dr, Unit 3EC
Scott AFB IL 62225-5310

SUBJECT: Sustainable Installations and Air Force 20/20 by 2020

1. The attached VCSAF memorandum directs Air Force organizations and installations to utilize facilities more effectively and efficiently by optimizing space use, reducing energy/water operating costs, sustaining only those assets needed to conduct the mission and demolishing the excess. Given the reality of fiscal cuts applied across the FYDP and with forthcoming efficiencies, we must achieve reductions or run the risk of spreading our O&M efforts too thin to meet mission requirements. I look to you to oversee this effort for your installation, ensuring alignment with your vision and base comprehensive plan.

2. HQ USAF/A7C revised AMC's "20/20 by 2020" target demolition goal from 6.6 to 10.1 MSF (see Atch 2). The changes resulted from the removal of Military Family Housing from the "20/20 by 2020" goal and accounted for square footage gained or transferred from other services. To achieve the new target, AMC must demolish about 1.0 MSF each year through 2020. Based on current projections, we'll only meet 40% of that goal.

3. To ensure effective use of AMC space, I'm asking you to take a harder look across your facilities, validate requirements by facility type, and initiate efforts to eliminate the excess via revision of your space management plan by 15 Jun 11. Please take a personal interest in this process to ensure engagement at all levels and a thorough, comprehensive look at every facet of your mission. The Directorate of Installations and Mission Support will provide guidance to assist you with this initiative. Should you have any questions, please contact Brigadier General Theresa C. Carter, HQ AMC/A7, DSN 779-0738.

VERN M. FINDLEY II
Lieutenant General, USAF
Vice Commander

2 Attachments:
1. HQ USAF/CV Memo, 14 Feb 11 w/atch
2. HQ USAF/A7C Memo, 10 Mar 11 w/atch

cc:
18 AF/CC
USAF EC/CC

UNRIVALED GLOBAL REACH FOR AMERICA...ALWAYS!